AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

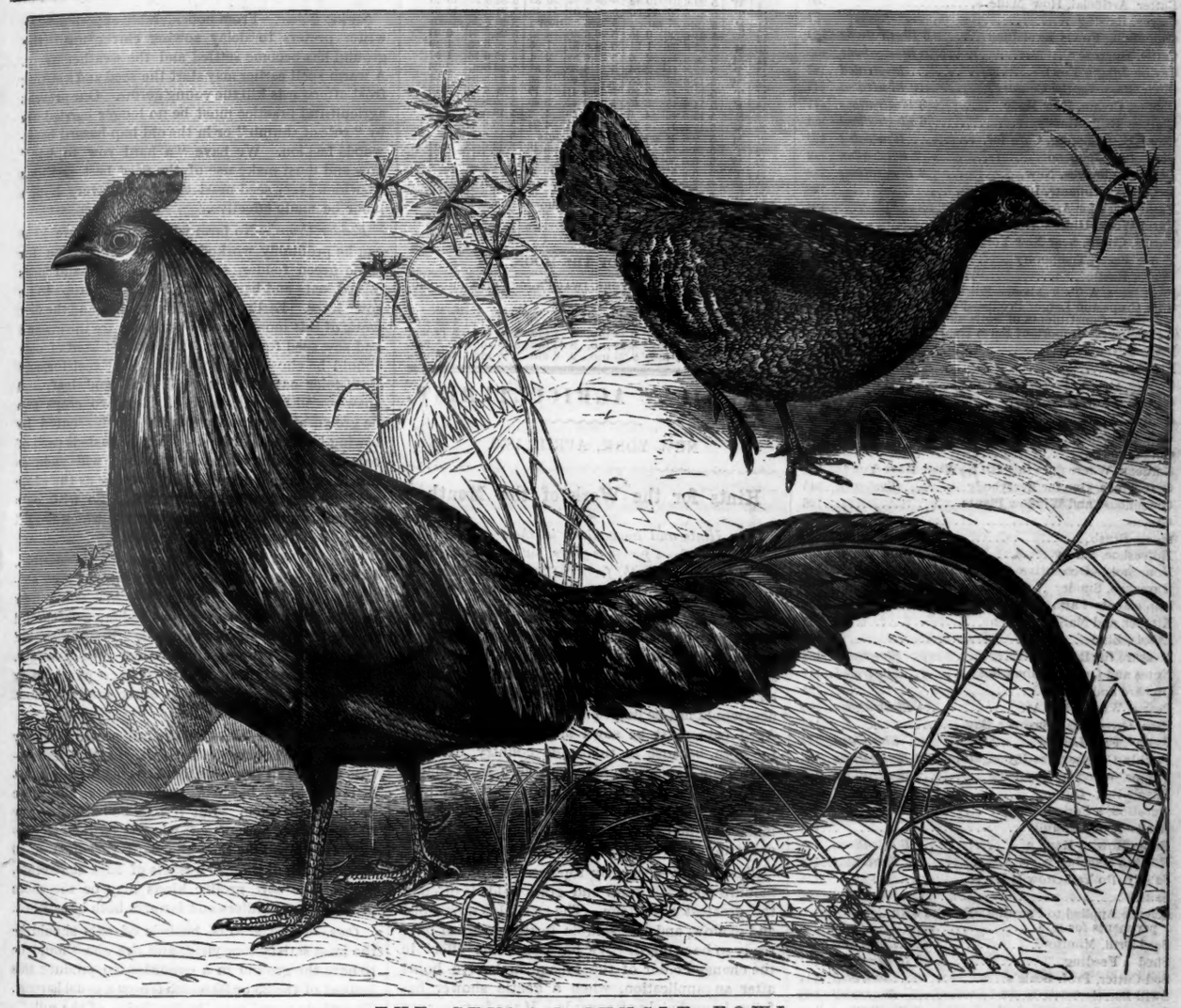
"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

ORANGE JUDD COMPANY, Publishers and Proprietors, 245 Broadway.

ESTABLISHED IN 1842.
German Edition issued at the same rates as in English.

TERMS: $1.50 per Annum in Advance, post-free; Four Copies $5.—Single Number, 15 Cents.

VOLUME XXXVIII.—No. 4. NEW YORK, APRIL, 1879. NEW SERIES—No. 387.



THE CEYLON JUNGLE FOWL.

The origin of our domestic animals is always an interesting subject, and the differences which have occurred through domestication and cross-breeding are well worthy of study. It is generally admitted that our domestic fowls have descended from the Jungle fowls of the East Indies, and the different species of game fowls still retain much of the shape, coloring, combativeness of disposition, and courage of the wild species. The Jungle fowls known to naturalists are four in number, and it is at present undetermined whether or not these species have a common origin, and if they have, which of the four species is the original one. The Indian Jungle fowl, *Gallus Bankiva*, bears the closest resemblance to our well known Black-red Game of all the four wild ones, and that fowl is regarded as the immediate parent of this variety, from which the several sub-varieties have been bred by crossing or by selection. Another species from Southern India, *Gallus Sonneratii*, is distinguished by the flattened shafts of the hackle feathers, and although it has been crossed extensively with domestic fowls, its progeny has been lost in the general mixing of new blood. It is now rarely known, except as the source of bright colored feathers which are in demand by the makers of artificial flies for fishing. The third species, *Gallus furcatus*, is known chiefly by its forked tail feathers and its brilliant metallic green shading; it has been crossed on the common fowl, but has left no special marks upon the races. The fourth, the subject of our illustration, and the rarest species, is confined to the Island of Ceylon, and has been seen in Europe only for four or five years past. It has no very marked characteristics, and is more like a common specimen of much-mixed "barn-door fowl" than any one of the other wild fowls. A general description of these fowls may given as follows: The adult male has striped and pointed feathers, which spread not only over the sides to form the hackle, but extend over the breast. The central saddle feathers are broad, brilliant dark-blue in color, and are edged with a slight fringe of orange. When young the cocks are but little different from the hens, the secondary wing feathers being barred transversely with bands of light and dark brown, and the neck feathers being streaked in a similar manner. As the males arrive at maturity the coloring becomes showy and brilliant, as is the habit with so many of the wild species of birds. The females are much like a Brown-red Game hen; the secondary flight feathers are strongly marked with alternate dark and light bars, and the breast feathers have a light center and margin. The young chicks have the three dark bands, one down the center of the head, and the others running backwards from the eyes, which are so common with the young of many of the domestic varieties. It is worthy of remark that these wild birds are very inferior to their domesticated descendants as table fowls, and in this respect they offer one instance, out of so many which we have, of the improvement which has been made by a systematic, long continued course of breeding.

COPYRIGHT, 1879, BY ORANGE JUDD COMPANY.

Contents of this Number.

Among the Farmers, No. 39.—Milk and Butter Record for Cows—Testing Farm—Pedigrees in Butter.....136
Anemone, Star.....*Illustrated*..145
Baby's Play-house.....*Illustrated*..147
Barn, Plan of.....*Illustrated*..141
Bark, for Buildings, Use of.....5 *Illustrations*..134
Bee-keeping for Everybody.....9 *Illustrations*..127
Bird's Nest, Strange Place for.....148
Blackberry, Double Flowering.....*Illustrated*..143
Boys and Girls Column.—The Doctor's Correspondence—The House-fly—Raising Butterflies—Setting a Butterfly.—The Doctors's Talks—Wagon on Inclined Road—Carrying a Load—Ladders, Good and Bad—Metrical System.....14 *Illustrations*..147-149
Butter, Artificial, How Made.....130
Calves, Raising.....137
Caponizing Fowls Explained.....5 *Illustrations*..139
Cattle, Guernsey.....3 *Illustrations*..135
Ceylon Jungle Fowl.....*Illustrated*..123
Chair, Easy, for the Country.....*Illustrated*..147
Cheese, Cream, How Made.....3 *Illustrations*. 141
Clothes Rack, Handy.....6 *Illustrations* .134
Cows, Self-Sucking, Cure for.....*Illustrated*..139
Cultivator Johnson.....2 *Illustration*..142
Dairy Appliances, New.....2 *Illustrations*..138
Farm Experiments, Important.....128
Farm Work for April.....124
Farm Work, Hints for, in April.....124
Farms, Cheap, near New York.....137
Fence Posts, Temporary.....2 *Illustrations*..134
Fence, Rustic.....*Illustrated*..145
Fertilizers, A Talk About—Editors Plain Talk—Better Crops and Larger Profits—Fertilizers and Their Action—Constituents of Soils and Manures—Quack Fertilizers—Important Farm Experiments.....127
Fish, Custard.....146
Fish Trap.....*Illustrated*. 139
Fodder, Green, Preservation of.....*Illustrated*..142
Garden, Flower and Lawn.....126
Garden, Fruit.....125
Gate Fastenings.....3 *Illustrations*..140
Gate Latch.....2 *Illustrations*. 137
Gardens, Where does this Hit?—What Have You?...141
Grapevines, One for Everybody.....*Illustrated*..145
Greenhouse and Window Plants.....126
Greens.....144
Horse-Brush.....3 *Illustrations*..139
Horseshoe, Safety.....3 *Illustrations*..137
Household—Decorative Art—Wood-Carving....5 *Il*..145
Humbugs, Sundry.....130
Implements, Farm and Garden.....142
Kitchen and Market Garden.....125
Labels, Zinc.....143
Measure for Rafters.....*Illustrated*..138
Notes and Queries, Household.....*Illustrated*..147
Orchard and Garden.....125
Pearls, What They Are.....4 *Illustrations*..150
Peas, Green, Half Bushel a Day.....145
Peony, Fine-Leaved.....*Illustrated*..144
Prickly Comfrey, Its Propagation....2 *Illustrations*..136
Pumps, Wooden, Repairing.....2 *Illustrations*..139
Puzzle-Box, Our.....*Illustrated*..148
Question, a Curious.....149
Read—Read Carefully.....134
Rope, How to Mend a.....4 *Illustrations*..141
Rowing-Machine, a.....*Illustrated*..149
Salsify, Do You Grow It?.....145
Salt-Box.....*Illustrated*..138
Science Applied to Farming—Results with Corn—Experiments for 1879.....129
Seed-Drill, Monitor.....*Illustrated*..142
Shed, a Feeding.....2 *Illustrations*..137
Sod-Cutter, Prof. Beale's.....*Illustrated*..144
Swill-Barrel.....*Illustrated*..138
Swine, Shelter for.....2 *Illustrations*..141
Tree-Planting State Aid to.....143
West, Far, Correspondence From.....140

INDEX TO "BASKET," AND OTHER SHORT ARTICLES.

Ants, Red, a Pest.....133
Beet Sugar in Maine....135
Boats, How to Make.....133
Butter, Borax for.....132
Charcoal Burning in Kiln 133
Cheese Factory, Stock...133
Churn a Reliable.....133
Concrete, Strength of....133
Cow, Grade Jersey.....133
Cow Leaking Milk.....133
Cow, to Feed on 1 Acre..132
Cud, Lost.....133
Eggs, White Leghorn....132
Engines, Agricultural....132
Farm, Good.....133
Fish, Large, Pickerel....135
Gains, More.....131
Grain Fan, Montgomery.132
Horses, Watering.....133
Horses, Whole Grain for.133
Insurance, Life, Reduction in Price.....132
Lambs in Market.....131
Lawn Mower, Phila.....133
Milk and Butter Record..131
Millet, Pearl.....133
Mud, Let It Dry First....131
Paints, Asbestos, Liquid.132
Pickerel, Large.....135
Plows, Chilled.....132
Plowing in green crops..133
Plowing with 3-horses...133
Pomological Soc'y, Am..133
Potato Bug, Poison for. 132
Reapers, Champion, etc..132
Roots for Cows.....133
Russian Fair.....132
Seed Drill and Cultivator.133
Sheep, Grub in Head....134
Sheep, Information about.131
Sheep Pelts, Tanning...133
Shingling Stage.....132
Shoe Dressing, Satin....132
Sod *vs.* Stubble for Corn.133
Turnips for a Horse.....133
Turnips for Milk.....132
Walking Match, the....131
Wheat and Chess.....133
Wool, Sheep Pulling....133
Wound in the Fork, Cure.133

Calendar for April, 1879.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	5 42	6 26	2 39	5 43	6 25	2 33	5 44	6 23	2 29
2	W	5 41	6 27	3 11	5 42	6 26	3 8	5 43	6 24	3 4
3	T	5 39	6 28	3 40	5 40	6 27	3 38	5 41	6 25	3 35
4	F	5 37	6 29	4 6	5 38	6 28	4 5	5 40	6 26	4 4
5	S	5 35	6 30	4 31	5 37	6 29	4 32	5 38	6 27	4 33
6	S	5 34	6 31	rises	5 35	6 30	rises	5 37	6 28	rises
7	M	5 32	6 32	8 3	5 34	6 31	7 59	5 35	6 29	7 55
8	T	5 30	6 33	9 24	5 32	6 32	9 19	5 34	6 30	9 14
9	W	5 29	6 35	10 42	5 30	6 33	10 35	5 32	6 31	10 29
10	T	5 27	6 36	11 50	5 29	6 34	11 48	5 31	6 32	11 37
11	F	5 25	6 37	morn	5 27	6 35	morn	5 29	6 33	morn
12	S	5 24	6 38	0 46	5 26	6 36	0 40	5 28	6 34	0 33
13	S	5 22	6 39	1 31	5 24	6 37	1 25	5 26	6 35	1 19
14	M	5 20	6 40	2 6	5 22	6 38	2 1	5 25	6 36	1 57
15	T	5 19	6 41	2 34	5 21	6 39	2 31	5 23	6 37	2 23
16	W	5 17	6 42	2 58	5 19	6 40	2 56	5 22	6 38	2 54
17	T	5 16	6 44	3 20	5 18	6 41	3 19	5 20	6 39	3 18
18	F	5 14	6 45	3 40	5 16	6 42	3 40	5 19	6 40	3 41
19	S	5 12	6 46	4 0	5 15	6 43	4 2	5 18	6 41	4 4
20	S	5 11	6 47	4 21	5 13	6 44	4 24	5 16	6 42	4 23
21	M	5 9	6 48	sets	5 12	6 45	sets	5 15	6 42	sets
22	T	5 8	6 49	8 22	5 11	6 46	8 16	5 13	6 43	8 11
23	W	5 6	6 50	9 22	5 9	6 47	9 16	5 12	6 44	9 11
24	T	5 5	6 51	10 20	5 8	6 48	10 13	5 11	6 45	10 7
25	F	5 3	6 52	11 12	5 6	6 49	11 6	5 9	6 46	11 58
26	S	5 2	6 54	11 57	5 5	6 51	11 52	5 7	6 47	11 46
27	S	5 0	6 55	morn	5 4	6 52	morn	5 6	6 48	morn
28	M	4 59	6 56	0 37	5 2	6 53	0 31	5 5	6 49	0 22
29	T	4 58	6 57	1 10	5 1	6 54	1 6	5 4	6 50	1 2
30	W	4 56	6 58	1 38	5 0	6 55	1 36	5 3	6 51	1 33

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
Full M'n	6	5 40 ev.	5 28 ev.	5 16 ev.	5 4 ev.	4 34 ev.
3d Quart.	13	9 25 mo.	9 13 mo.	9 1 mo	8 49 mo.	8 19 mo.
New M'n	21	9 11 mo.	8 59 mo.	8 47 mo	8 35 mo.	8 5 mo.
1st Quart	30	9 32 mo.	9 20 mo.	9 8 mo	8 56 mo.	8 26 mo.

AMERICAN AGRICULTURIST.

NEW YORK, APRIL, 1879.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

These hints are intended to suggest thoughts which may be made helpful in the study of farm work and the learning of the best practice, and not as a list of orders to do this or that at any particular time. A farmer who does not know his business would not be helped much by reading that in April oats must be sown or the ground plowed for corn, because in this wide country, oats are sown from January to May, and corn from March to June. We desire to give hints that will help not only the beginners, but the old farmer who must live and learn, because something new is occurring in farm practice every day.

Top-dressing.—An early top-dressing of artificial manure upon fall grain and grass fields is often of the greatest advantage. The ground is now moist and mellow, and the soluble fertilizers are at once ready to be utilized. We have seen the effect in the changed color of the foliage in twelve hours after an application, when a gentle shower has fallen immediately afterwards. If the fertilizer can be sown during a shower so much the better, otherwise we choose the afternoon for the work, so that the dew of the night may act as a rapid solvent.

What Fertilizers to Use.—For grass, 150 lbs. of Rectified Peruvian Guano per acre is often useful, and so may be the same quantity of complete grass manures made for this purpose. Those who cannot procure these easily, can use 100 lbs. of gypsum per acre, with 250 lbs. of fine bone dust and as many wood ashes as possible up to 40 bushels per acre. The German Potash Salts are a good substitute for ashes. For grain the prepared complete fertilizers, or Peruvian guano, bone dust, or superphosphate of lime may be used. Wood ashes never come amiss for any crop. See page 127.

A Caution.—Great damage may be done by using concentrated fertilizers in close contact with seed or very young plants. A teaspoonful of such a fertilizer dropped upon a seed or young sprouted grain will kill the germ, or the tender sprout or "growing point" of the plant. Any concentrated fertilizer should be *well mixed* with the soil or scattered very thinly over the surface, and unless it is raining at the time, should never be sown upon a growing crop while the leaves are wet. Common sense will guide a thoughtful man when he knows that most of these fertilizers are either caustic or corrosive, excepting gypsum, which is harmless.

Harrowing Winter Grain is a practice now generally adopted, and there are many good harrows made especially for this purpose, with teeth that slope backwards, or that may be reversed for ordinary work. Harrowing after applying fertilizers or sowing grass or clover seed is doubly useful.

Sowing Clover.—From considerable experience the writer prefers to delay sowing clover until the ground has become settled and the weather warm. A warm spell earlier may start the seed and a strong frost afterwards kill the young germs. Our present agricultural practice must be no longer carried on by "rule of thumb" or in the old hap-hazard backwoods fashion. We have "a hard row to hoe" now and must make use of the very best methods by which every seed must count and every hour's labor be made effective.

Fodder Crops.—No farm where animals are kept can be profitably worked without a provision for some green fodder, such as oats, oats and peas mixed, oats and barley mixed, or other crops to be sown later. Earliness is indispensable, and the first work of this month should be to prepare the ground and sow seed for fodder. The leafiest kind of oats should be chosen; New Brunswick, Excelsior, and Probstcier oats have a good stalk and leaf, and answer well for this purpose. But two crops can be grown at once and a double yield secured by sowing two kinds of seeds. Thus 1½ bushels each of oats and Canada peas sown together, will yield as much fodder on good soil on one acre as the same seed sown separately on two acres. So with oats and barley mixed, and other mixtures which should be studied and experimented upon.

Spring Wheat should be sown as early as possible, and so should oats. These grains need a long season to develop their full growth. Some new varieties of wheat are very promising, and should be tried in a small way as a test. No one should risk his whole crop on any new and untried variety. As wheat does not mix in the field, a new variety may be tried in a strip with other kinds, without risk of mixing the varieties.

Soft and Hard Wheats.—The millers are generally opposed to what they call "soft wheats," and refuse to pay full price for them. This may be a just discrimination, because hard wheats are more profitable to them. But it may be better to grow 30 bushels per acre of soft wheats, (which is generally more prolific than the hard varieties) at 60 cents a bushel, than 20 bushels of hard at 70 cents. So that the soft, prolific kinds may be the more profitable and millers and farmers both be satisfied.

Oats.—From 50 to 60 bushels of oats should be the least satisfactory yield, and the aim should be to have the ground in a condition to produce this instead of the 25 or 30 which is now a usual harvest. The whole secret is in the fertilizing of the soil.

Barley should not be considered as merely a material for brewing. There is no better grain for horses, and barley-meal with corn or potatoes is excellent for cows and pigs. The two-rowed variety yields more than the six-rowed, but the six-rowed brings 10 cents more from the malsters. Two-rowed is the better for fodder purposes also. For a good yield of barley the soil must be fine and rich, otherwise oats should be sown.

Peas may be made profitable where the green pods can be sold in the market and the straw cut for fodder. As nearly all our native grown seed is half spoiled by the weevil, seed from Canada, or other localities free from it, should be procured. Peas may be sown with a grain drill by stopping every alternate spout, and may be cultivated with the grain horse-hoe (described in the *American Agriculturist*, August, 1878).

Cultivating Small Grains.—The practice of cultivating small grains, oats, barley, wheat, and peas,

will become general as soon as the advantages are well understood. The cultivator or horse-hoe made for this purpose may be used for corn, roots, and potatoes, as well as for the small grains.

Plowing for Mangels or Beets.—Mangels and sugar beets should be sown next month. But the ground needs such thorough preparation that this work should be begun in April. A corn or potato stubble may be chosen, manure spread and plowed in and the ground harrowed and rolled if needed, until perfectly mellow. Two plowings are advisable, the first, deep, if the soil is stiff.

Potatoes.—Experience with the Colorado beetle, should prompt the early planting of potatoes; also abundant manuring and good preparation of the soil. The latter often doubles the crop. An extra 100 bushels of potatoes per acre is well worth working for. It does not pay to plant large seed. Small, well-ripened seed will be the most profitable when its cost is considered. After much observation, the writer finds no difference in the crop from small and large seed. Of course there is a limit, and potatoes as small as hickory nuts are not referred to.

Carrots and Parsnips, as field crops, are not to be recommended, unless for sale, when we can grow sugar-beets and many varieties of mangels with half the trouble of cultivating and harvesting. If carrots are desired by dairymen for special purposes, they might try as a substitute, the yellow or orange-globe or egg-shaped mangels, the red beets or the early blood turnip beets which come in for early fall and winter feeding.

Flax.—This crop promises to become a staple, East as well as West, as flax manufacturing is becoming established. Low, moist ground, newly cleared swamp or meadow-land suits flax exactly. In the West, fresh prairie is suitable. 1 bushel of seed per acre should be sown this month.

Raising Calves.—To purchase improved stock, requires much money. But the same result may be gained by keeping a well selected bull and raising the heifer calves with care. Calves will thrive well when taught to drink from the pail the third day. It is well for them to suck the cow and soften the udder, for three or four days.

Sheep.—Lambs and sheep intended for sale should be pushed as fast as possible with safety. But most haste in this respect often secures least speed. Ewes that have raised lambs and that are to be sold, should be fed so as to be out of the way by June.

Cows.—There is no better feed as a steady diet for cows, than grass; but there may be cases in which some stimulating food may be used with benefit. Early grass is not healthful, being immature and too laxative. It would be better to follow the old English practice in this respect, and not turn cows to grass until May. May-day is an ancient farmer's holiday on this account in England, and we might well follow their practice. This, of course, refers to localities with the same seasons—earlier at the south, and even later at the far north.

Horses.—As the coat begins to loosen, the skin is often irritable. This may be corrected by giving in the food daily one ounce of an equal mixture of sulphur and cream of tartar for a few days. Good grooming with a soft brush and a blunt curry-comb should not be neglected. If the gums are swollen, rub them with a corn-cob dipped in powdered borax. Cleanliness is a great preventive of disease. As the weather becomes warmer, more oats, rye, or barley, and less corn may be fed. An occasional feed of cut ruta-bagas will be useful.

Brood Mares.—As foaling approaches, brood mares should be turned into a loose box. The extra exercise is beneficial and they rest more at ease. Their work should be lightened. The most gentle treatment should be exercised; the temper of the colt often depends upon this.

Pigs.—Pork is looking up, and pigs are worth more than they were a few months ago. While prices are low, the cost of feeding should be reduced. Pigs can be kept most cheaply upon grass in summer, and an orchard is a good place for them; they will do service in destroying insects.

Sundry Matters.—Poultry should be kept free from vermin; dig up the ground in the runs and clean the houses and so escape gapes. Provide good coops for young chicks, and let them run in the garden or orchard. Clean up everything about the house and barns and burn the rubbish; numerous eggs and chrysalids of insects will be burned with it. Put all the tools and implements in order, and whitewash pig-pens, poultry-houses and sheep-pens. Look well to fences before cattle find the weak places; if these are once found, they are always dangerous. Pile up all loose manure; it may thus be made into good condition for corn or roots next month. As the weather becomes warm, use plaster freely to deodorize yards, stables, and pens; it does a double duty when thus used. Clear the outlets of drains, and repair washed roads.

The Orchard and Garden.

Not having space for the few general Notes on the work of the horticultural departments usually given here, we commend the readers to those of last month. They are quite as timely now as then, and have lost none of their importance.

Orchard and Nursery.

The preliminary work as indicated in these columns for the last two or three months, will, in many localities, be yet in order. We have advised ordering trees early, and if they came to hand before the proper time to plant, it was advised to *heel them in, i. e.*, to set them temporarily in trenches, where they will be safe for some time, until they can be planted....In many cases trees have to make a long journey from the nursery to the purchaser, and

Trees in transportation are liable to injury, in spite of the skillful packing of the nurseryman. If detained on the road, they may dry out and, when opened, present a dead and shriveled appearance. No matter how unpromising they may look, they can probably be restored. First look to the labels, and see that they are all well fastened; then open a trench in a dry sandy place, and bury the trees root and branch, taking care that the moist earth comes well in contact with the branches and twigs to the very top. A week or less of this treatment, unless the trees were absolutely dead, will completely restore them. Be very careful, in taking them out, not to lose labels or break the twigs. ....Another danger is overheating, causing the

Buds to start into growth.—The uppermost buds may have weak white shoots some inches long, the lower ones shorter shoots, while farther down on the branches the buds will still be dormant. In this case, the branches must all be cut back to a sound bud. The needed severe cutting may not leave much of the tree, but it is the only remedy.

Cutting Back at Planting.—The novice at tree-planting can not see why he should not set all that the nurseryman gives him. So he might, did the nursery give him all that belongs to him. Even with the greatest care, some roots must be cut off, but in hurried work the tree is deprived of one-third to one-half of its roots. It then becomes a matter of necessity to cut back the top, that there may be a proper proportion of root and branch.

Do not Hurry tree-planting. If the ground is not dry and mellow, let the trees wait. The land being marked out, and the place for each tree staked, take sufficient time to plant each tree properly; this means spreading the roots; covering them gradually with top soil, working this well in among the roots, firming the soil gently with the foot—not trampling it—then when the filling is completed press down the soil firmly again.

Stakes are not needed if a tree is well set, unless it is of very large size. Many water the roots at planting, but this is unnecessary except late in spring when the ground has become somewhat dry.

Mulching is always needed, to keep the soil around the roots moist. Straw, poor hay, stable litter, chips, or whatever will prevent evaporation.

Grafting succeeds best with perfectly dormant cions set upon stocks, the buds of which have commenced to swell. Full details are given in the number for April, 1877, which may be had for 15 cents.

The Canker-worm, in localities where it is troublesome, appears as soon as the ground thaws. The female, being wingless, can not fly, and when she leaves the ground has to climb up the trunk to lay her eggs. All "remedies" consist in presenting some barrier to the ascent of the female. Contrivances are numerous; the simplest is a band of heavy brown paper around the trunk, smeared with tar or printer's ink, and looked to every few days.

The Tent Caterpillar.—Before the trees leave out, they should be carefully inspected for the eggs of this insect. They are in a band about an inch long near the ends of the small twigs, and are readily seen against the sky. Cut and burn.

Mounds of Earth that were made around young trees last fall to keep off mice, should be leveled.

The Fruit Garden.

The fact that one has not a plot of land to set apart for a fruit-garden, should not prevent his having an abundance of small fruits. While it is better on many accounts to have separate gardens for the vegetables and the small fruits, cultivate them together rather than be without either. Last month we noted the standard varieties. Nearly all of the small fruits start early, and should be planted as soon as the soil is in good condition. Distances apart to plant the kinds were given last month.

Strawberries.—Uncover them, merely separating the straw over the plants, and exposing the leaves to the light and air, leaving the soil covered. Set plants early, that they may get well established before hot weather. Plants set now will give a full crop next spring, but not before. They are sometimes used for an edging in the vegetable garden.

Currants.—If not pruned last fall, do it at once, cutting out branches where they are crowded, and shortening the new wood. Manure abundantly. If the soil is light and dry, cover it with coarse litter.

Gooseberries.—Give same treatment as currants.

Grapes.—If any were left unpruned last fall, prune at once. Plant vines early. See article on page 145.

Raspberries.—If tender kinds were covered last fall, take them up and tie to stakes or trellis.

Kitchen and Market Garden.

Plants Wintered in Cold Frames.—These are set out just so soon as the soil can be worked, as described last month, and the sashes from the frames are used upon other frames, to hasten forward a crop of lettuce. As soon as the lettuce is cut, cucumbers come on in the frames, and their early growth much forwarded; thus the sashes pay.

Plants under Glass.—Those from seeds sown this spring, whether in hot-bed, cold-frame, or window boxes already described, need care to prevent them from being drawn up and weak. This is done by transplanting and giving more room, and by exposing the plants every mild day. Tomatoes that have been transplanted into flats or boxes, are helped by root pruning. This is done by drawing a knife through the soil, midway between the rows of plants each way. If this is done two or three times, each plant will have its compact little ball of roots.

Window Boxes containing vegetable plants, may be set out during mild days, and when it may be done without risk of frost, be left out all night.

Sowing Seeds.—The distinction given last month between *Hardy* and *Tender* Vegetables should be kept in mind. It is very easy to remember whether a given vegetable belongs to one of two classes.

Hardy Vegetables can be sown everywhere so soon as the soil is dry enough and heavy frosts are over.

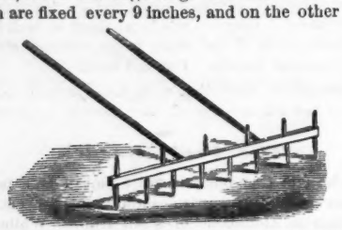
Tender Vegetables should wait until the soil is not only dry but *warm*, and the danger of all frosts is past. This is fixed for every neighborhood by the observations of farmers who have learned at what date it is, on the average, safe to plant Indian corn. As corn is a tropical plant, and quite as tender as any other of the garden, it makes a very safe guide.

Garden Implements.—On page 142 we have set forth the advantages of having, in even a moderate-sized garden, a seed-sower and weeder, as they not only save time, but do the work much better than

it can be done by hand—other sowers and other weeders afford quite a variety to choose from.

Distances Between Rows.—In a large garden it makes a great deal of difference whether rows are 12, 15, or 18 inches apart, but in a family garden a few inches are not so important. Provide markers to mark all needed distances without delay in changing the teeth. We find it better to have two

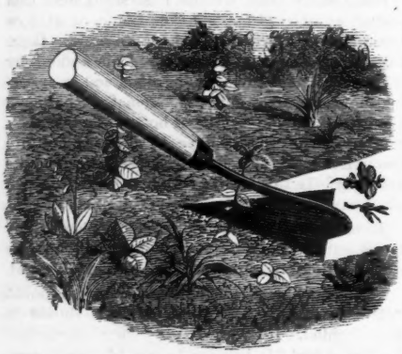
Markers, which are home made. A piece of scantling of convenient length has handles attached, as in the engraving. On one side stout teeth are fixed every 9 inches, and on the other at



12 inches. This gives, by using every mark 9 and 12 inch rows, and using every other mark 18 and 24 inch; besides this, we have one with the teeth 15 inches apart, which is often desirable. A line is set to run the marker by, the one who uses it walking backwards; if more rows are to be marked, the line will not be needed again, as a tooth of the marker may be run in the last furrow made.

Garden Line and Reel.—A line will often be needed in laying out rows, beds, etc., and *should have* a good reel. We emphasize should have, and if any one knows where a garden reel can be bought that is worth its weight in old iron, we will be obliged to them. We know of nothing more absolutely worthless for the purpose it pretends to serve than the garden reel as sold. It looks well, but will not last a week. It will save bother to discard the reel, and take two hard-wood sticks, 2 to 2½ ft. long, pointed at one end, and wind up the line on one, as a boy winds his kite-string, and tie the end of the line to the other. Another tool to be provided, is a

Lance-headed Hoe.—So far as we are aware, this hoe is not yet in the trade. It is so valuable an implement that we repeat our figure of it given once before. To every one who has much garden-work to do, this pattern is worth five years' subscription to the *American Agriculturist*. Have a hoe made at once, and when the weeds come, use it an hour and you will wonder how you have ever had a garden without it. The engraving will answer for a pattern to the blacksmith. The blade is 4½ in. long and 2½ in. wide at the end, of heavy steel plate (ours are mowing-machine plate), set to a shank shaped as the engraving. Used as here shown, it cuts with



great rapidity, but if an obstinate weed is met, give it the point. Keep sharp, and the large hoe will be seldom used. No bayonet hoe is nearly so good.

Varieties were fully discussed last month. The list given then on page 84 is intended as a guide to the novice—of course there are other good kinds besides those mentioned in the article, and there is abundant room for individual preferences.

Greens are sufficiently discussed on page 144. No form of vegetable is more acceptable in spring.

Peas are also treated of in a separate article (page 144). These are often sown while only the top-soil is thawed, as they germinate at a very low temperature. For a row of the very earliest we have put boards together, to form a V trough. These were set during the day on the side of the row, and at night turned over the plants.

Early Potatoes.—Those who wish the very earliest, start their potatoes in a warm room in boxes of earth; they require very careful cutting at planting time, to not break the shoots. Plant as early as possible to be ahead of the beetle.

Asparagus.—Rake off the coarse litter, and as soon as the bed is dry enough, turn in the fine manure with the points of the fork, taking care not to injure the crowns. New beds are to be set as soon as plants can be had. Strong, vigorous one-year old plants are best. In the best field-culture the plants are set 4 feet apart, with 6 feet between the rows, giving each plant a good supply of manure as it is set. In the family-garden such wide planting is not desirable. It is well to allow 3 feet between the rows, to allow room in collecting, and crowd the plants in the rows. Some set them 12 inches, and some as close as 9 inches, first working in a heavy dressing of well decomposed manure. The crowns should be at least 4 inches below the surface. Asparagus is not cut until the third year.

Succession Crops.—In localities where the season has allowed of the first sowings, the second should be made a week or 10 days after, especially of those vegetables as are of short duration, such as peas, radishes, lettuce, etc.

Sweet Potatoes need to be put into hot-beds about six weeks before the shoots can be set in the open ground. In the vicinity of New York the first of June is the average time for planting, and we put in the potatoes the middle of April. A light hot-bed is made, on this a few inches of soil is put, and the potatoes are laid rather closely on this and covered with an inch or two of soil. When sprouts appear, care is needed in watering and ventilating.

Fertilizers.—In many localities the obstacle to successful gardening has been the difficulty in getting a sufficient supply for manure, gardeners as a general thing being distrustful of artificial fertilizers. Within a few years the manufacturers of fertilizers have given their attention to garden crops as well as to field crops, and one can now procure just such materials as he wishes in any desired quantities. The articles on fertilizers that have appeared in former months, as well as those in the present number, have a value to every cultivator of the soil, and the fact that they are addressed to farmers does not make them any less useful to gardeners.

Flower Garden and Lawn.

Whatever is to be done in the way of seeding or turfing should be attended to early, in order that the grass may become established before hot weather. For small plots the quickest results are had from turf. In turfing care is requisite in selecting the sod, to introduce no unwelcome weeds, and the foundation should always be carefully prepared so that there may be no uneven settling. On light soils, Red-top, especially that variety known as Rhode Island Bent, is best, and on heavy soils, especially if calcareous, Blue Grass is excellent. Either of these with a quart of White Clover seed to the bushel, is as likely to give a good lawn as any mixture, and more so than an imported mixture, as those often contain kinds that do not flourish here.

Quality and Quantity of seed have much to do with success in lawn making. If six bushels of grass seed are directed to the acre, it is because from three to five of these bushels are likely to be chaff. It will pay to examine different lots of seed before purchasing; the difference in the amount of real seed will often be found surprising.

Weed-Seeds should not be sown, as they are very apt to be unless the seed is carefully inspected.

A Top Dressing should be given the lawn each spring. Ashes, plaster, guano, fine bone, or nitrate of soda, may be applied on successive years, or a fertilizer containing all the essentials may be used.

Planting of Trees and Shrubs should be done early, and with as much care to preserve the balance between top and root as advised with trees.

Perennials, such as bloom early, are better if not divided until after flowering, but the others may be divided and reset at once.

Ornamental Beds, to be planted with tropical and other tender plants, should be manured and spaded, in readiness for planting.

Gladioluses are nearly hardy, and a first planting may be made as soon as the ground can be worked.

Cannas, Tuberoses and Dahlias may be set in boxes of earth in a warm place, to give them a start.

Greenhouse and Window Plants.

The glass of the greenhouse will soon need a light coat of lime wash, and the plants in the window will require a muslin shade at midday.

Plants to Set Out, whether in the borders, or to be kept in pots during summer, must be gradually hardened for the change by giving exposure to air.

Propagate from such plants as will be set in the garden. Geraniums and many others will be too large to take up again next fall, and good young plants should be provided to take their places.

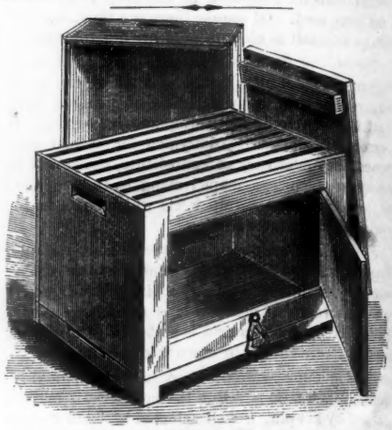


Fig. 1.—OBSERVATORY HIVE.

Bee-Keeping for Everybody.

BY L. C. ROOT, MOHAWK, N. Y.

Notes for Beginners.

In Feb. last, Mr. Root began at our request a series of articles intended for persons knowing nothing whatever of bee-keeping. There was an unavoidable omission of the article for March, the main points of which are given now. In February, page 47, the two leading kinds of hives are described in detail—the Hanging-Comb and the Standing-Comb hives. It was intended to show how the Langstroth or Hanging-Comb hive could be arranged as a hive for observing bees, but as room could not be found for the engraving, that and the description were then omitted and are now given. Mr. R. says:

HIVES FOR OBSERVING THE BEES.

The interest of bee-keeping is greatly increased by being able to watch the bees while at work, without disturbing them; several "Observatory Hives" have been devised for this purpose, one of which is shown in figure 1. This is essentially the same as the Langstroth Hanging-Comb hive (described February last, page 47, fig. 2), except that the two sides, instead of being solid, are made as frames 2 inches wide. Each frame has a pane of glass fitted upon the inside, and is furnished with a

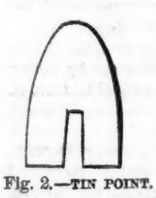


Fig. 2.—TIN POINT.

Fig. 4.—BOX COMPLETE.

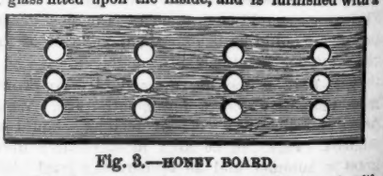


Fig. 3.—HONEY BOARD.

door. The door, made of two pieces of thin board, with the grain crossed, to prevent warping, should fit the frame neatly, be hung with small hinges, and fastened

by a button or hook. This hive is shown in fig. 1, with the door opened and the top and cap removed. If it be desired to watch the bees from above, a frame with glass may be fitted to the top of the hive.

Beginners should bear in mind that promptness is one

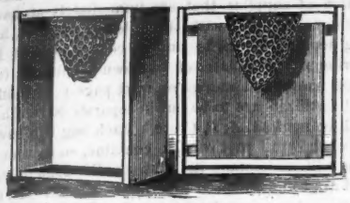


Fig. 5.—SECTION BOX.

of the prime essentials to success in bee-culture. It will be necessary to prepare boxes before they are needed, that they may be put on at once whenever wanted.

Many prefer a two-comb box holding about 4½ lbs. To fit the hanging-frame hive (shown at fig. 2, in February last.) or the Observatory hive, here given, fig. 1, these boxes should be made 6¼ in. long, and 4¼ in. wide, of pine or basswood lumber, 1¼ in. thick. The posts should be 5 in. long, and ¾ in. square. These will take glass 5x6 and 4x5, which is fastened in place at the corners with tin points, fig. 2. Honey-boards, ¼ in. thick, to place under the boxes, when upon the hives, should be prepared as shown in fig. 3. The bottom of the box has holes to correspond with those in the honey-board. The box complete is shown in fig. 4....A popular box at the present time is a Single-comb or Section-box. These

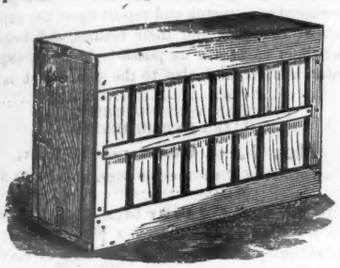


Fig. 6.—CLAMP.

may be made as shown in figure 5. The ends are 5 in. long, 1¾ in. wide, and ¾ in. thick. Top and bottom are 5¾ in. long, 2 in. wide, and ¼ in. thick.—These are to be placed upon the hive in what is called a clamp, which is shown in figure 6. It is a simple box, 5¼ in.

Fig. 7.—SEPARATOR.

high, 17 in. long, and 11¼ in. wide; these are the measurements if it is to be used for the standing-frame hive. If designed for a hanging-frame hive, it should be 12¼ in. wide, instead of 11¼. A part of one end of the clamp should be movable, and made to fasten in place with hooks,

Fig. 8.—VAN DEUSEN FASTENER.

in order to put in and take out boxes with ease. A piece of ¼-in. band iron should extend lengthwise the clamp at the center. A strip of wood, or hoop-iron, should be nailed on the edges parallel to this, projecting inward ¼ in., to support the ends of the boxes, of which there are two rows in the clamp. A separator, as shown in figure 7, should be prepared of proper size, and ¼ in. thick, to place between the boxes, to secure straight combs, and at the same time allow the bees to pass from one box to another.

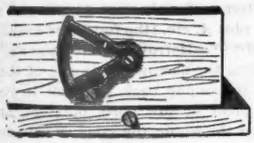


Fig. 9.

MARCH NOTES.

VAN DEUSEN FASTENER.—Mr. Howarth, of Illinois, asks: "Can you not illustrate and describe the Fastener for holding the hive to the bottom board in your next 'Notes?'" . . . This is known as the "Van Deusen Fastener," and is a very ingenious and valuable invention. Figure 8 gives an accurate idea of it when adjusted, and figure 9 when turned back and not in use. It holds the hive firmly in place when it may be desirable or necessary to move it for any purpose, and when it is not in use it is entirely out of the way.

MATERIAL FOR PRODUCING SMOKE.—Mr. Mason, of Michigan, asks: "What shall we use for smoke to quiet bees?—What do you think of puff-ball?" . . . The question of producing smoke, and manner of using it, has been one of our particular hobbies. We have experimented with every substance that has been suggested for the purpose. Puff-ball is objectionable, as it stupefies the bees too much. Nothing is more desirable than half-decayed wood. If it is very dry, it need be but very slightly decayed. It is applied to most perfect satisfaction by the use of the "Quinby Bellows Smoker."

SOURED HONEY.—Charles M. North, Delaware Co., N. Y., asks: "Will it answer in wintering a weak swarm to feed them on soured honey?" . . . I would not recommend it as a general rule, but have known it to be done without injury. This query has been accidentally overlooked, else it would have been answered before.

A Talk about Fertilizers.

Editor's Plain Talk with Plain Men.

This subject is one of rapidly increasing importance to *nine-tenths* of the cultivators of arable lands in New England, New York, New Jersey, Pennsylvania, Maryland, Delaware, Virginia, North Carolina, and considerable portions of South Carolina and Georgia; to *three-fourths* of those in Ohio, Indiana, Michigan, Kentucky, Tennessee, and portions of Alabama and Ontario; to more than half of those in Illinois, Wisconsin, Eastern Iowa, Eastern Missouri and Eastern Minnesota; and to a considerable number in the comparatively newer regions still further West. It is of importance *wherever* the richer stores of natural fertility in the virgin soils have been partially diminished or exhausted by some years of tillage.

Better Crops and Larger Profits.

The great truth we have so frequently enforced and urged upon the readers of the *American Agriculturist*, is coming to be better understood, viz., that the *profits* of soil culture depend far more upon the *yield per acre*, than upon the number of acres gone over. Thus: If 50 acres require $500 expense of one's own or others' labor, for teams, implements and seed—to work, harvest and market crops equivalent to 12 bushels of wheat per acre, worth $1 per bushel, there is a profit of only $100, to pay interest on land, taxes, etc. On 100 acres the gross profits are $200. If now, by the use of fertilizers, or otherwise, we can raise the products to an equivalent of 20 bushels of wheat per acre, with the same expense of labor, teams, seed, harvesting, interest and taxes, the 50 acres will yield a gross profit of $500, or $1,000 on 100 acres. Or 25 bushels per acre would give a gross *profit*, less cost of fertilizers, of $750 on 50 acres and $1,500 on 100 acres.

As to Fertilizers and their Action.

Omitting the question of drainage, and of green manures, and supposing the land in proper dryness and tilth, there is no doubt that a sufficient amount of the right kind of manures or fertilizers will secure this 8 to 13 bushels per acre *increase*.

To fertilize, means to make *fertile*—to increase the crop-producing power. The crop feeds on what it finds in the soil. Any thing is a fertilizer that adds to the supply of plant-food in the soil, or which by its action decomposes, unlocks, or changes to an available form, some food which is already in the soil but is in a form that the crops can not use. If, for example, plant-food was bound up in little sacs or coverings in the soil, and potash or lime would eat off these coverings and let it out so that the roots could get at it and feed upon it, the potash or lime would act indirectly as a fertilizer. Plant-food is actually locked up in bits of soil, and potash and lime soften and break up these bits; they thus help feed the plants.

Illustration.—Pearl-ash is composed of potash and carbonic acid. If mixed with dough, and baked, it merely browns it. A little cream of tartar put in will attack the saleratus, take away its potash, and the carbonic acid will spring out as gas all through the dough, filling it with holes and making it light and agreeable. Just so some substances when mixed with the soil attack and decompose certain materials and set portions of them free for the plants to feed upon.

Recent observations, careful experiments, and extensive chemical investigations, show that our cultivated crops need for their best growth the presence of several substances. Three or four are seldom abundant in soils, or are largely available in but few, and are rapidly exhausted by the removal of crops. Two of these, for example, PHOSPHORIC ACID and NITROGEN*, are indispensable as plant-food. POTASH is also needed as food, and to develop and prepare other food. LIME acts like potash in feeding or preparing food for plants.

The most Valuable Constituents of Soils and Manure.

Of these four substances, *Nitrogen*, *Potash*, *Lime*, and *Phosphoric Acid*, some soils and crops want one, some want two, and some want three, if not all of them. Good Barn-yard Manure invariably contains all of them. So long as one can get *enough* of good barn-yard manure, cheaply enough, and near enough to the fields, *that* is all that is needed. With it, if the other conditions of the soil, its dryness and tilth or mechanical condition, be right, we can raise our crops from an equivalent of 12 bushels of wheat to 20, or 25, or more bushels per acre.

But unless it be on farms mainly used in stock-raising, there is far from enough good yard-manure to secure the higher profits. And just here another question comes in. If a soil lacks potash *only*, a small quantity of this in the form of potash salts, or of ashes, may be as useful as thousands of pounds of yard-manure containing only the same amount of potash. In that case we could buy and apply the potash more cheaply than we could haul and apply the manure to a field distant from the yard, allowing the manure to cost nothing. If the soil lacks *only* phosphoric acid for a certain crop, a bag of superphosphate or dissolved bones will supply more of it than several tons of yard-manure. If, then, we can ascertain just what a field lacks, we may find it very profitable to buy the special fertilizer the soil wants, and use the yard-manure on such fields as need all it contains, or on those heavy soils where its loosening effect will be most useful, and where little hauling is required. Now we are at the pith of the subject.

Quack Fertilizers, and Good Ones.

What fertilizers shall I use to increase my crop—my corn, my wheat, my oats, etc.? Thousands of such questions come to us every year. We would rather be able to answer these questions definitely and satisfactorily in every case, than to own half the farms in a State. But we can not, as will be seen. The quack doctor, or quack medicine-man, commends a particular medicine for a hundred ailments. The quack manure-man who commends one kind of manure for *all* soils and crops is little better—unless his fertilizer contains all the materials needed by any soil or crop. "His gun is then loaded to kill if it is a deer, or miss if it is a calf." This is the case with the best "Complete Fertilizers" and with a mixture of potash salts with Peruvian guano, or with good superphosphates from unburned bones.

Some prepare special fertilizers, as "Wheat Fertilizers," "Corn Fertilizers," "Potato Fertilizers," etc.—the chief ingredients being those which the makers claim to be most useful to these several crops, and in many cases they just hit the want. But such fertilizers are similar to concentrated barn-yard manure, and the question is, will they

* PHOSPHORIC ACID, united with Lime, makes the solid parts of the *bones* of all animals. It must come from the food eaten, and the grain, hay, etc., must of course get it from the soil. But it is rare to find land containing 1 pound of available phosphoric acid in 1,000 lbs. of the soil. This explains why it is so soon exhausted by growing crops, and why it is so important as a fertilizer. (Chemists take away the lime from burned bones and get the phosphorus so much used for friction matches)... NITROGEN abounds in lean meat (muscles), cheese, etc., which come from plants. It is scarce in most soils, hence its usefulness as a fertilizer to supply crops.... POTASH abounds in the ashes of wood and of all plants. We wash it (*leach* it) out of ashes, evaporate the water and get the solid potash. This, too, is seldom abundant in soils, though important to the growing plant, and hence it is valuable as a fertilizer.

pay? On soils needing *all* their elements, they will pay, if not sold at too high a price. They very often pay even when only one of their ingredients is actually needed, but by no means always. The "complete fertilizers" have been somewhat popular, because, having all the most valuable ingredients of plant-food, they seldom fail entirely, and they often do very good service to the crops.

What our Soils Need.

But soils are so variable, even on the same farm, that it is next to impossible to say, without actual trial, that for a particular crop, this soil wants potash, that one wants phosphate, this one wants nitrogen, that one wants plaster, this one wants lime, and so on. Novices in agricultural science, and certain quacks, a few years since claimed that a chemical analysis of the soil would reveal its defects. This is not now claimed. A few—pity there are so few—earnest, conscientious, thorough investigators, are pushing their inquiries, and from observation they are able already to give a fair guess as to the most probable wants in certain cases, and science is now doing for agriculture what it has long been doing for other industries. These men have already stopped an immense amount of fraud, by examining fertilizers and securing laws that require makers and dealers in fertilizers to describe what they sell, and sell what they profess to. Large reputable establishments have grown up, and it is now easy to get what we want—instead of guano, phosphates, etc., adulterated with a large proportion of colored earth, or other useless material to give bulk and weight. Scientific men are also discovering new sources of potash, phosphoric acid, etc.

The practical question before us now, this spring, is, what fertilizers shall we buy. We are met by the announcement of two classes, viz.: "Complete fertilizers," and "Special fertilizers," and other articles, as guano, superphosphates, potash salts, etc., offered by reliable dealers who have a reputation to sustain. If one's own experience, or that of neighbors on similar soils, will afford any guide, it is best to follow that. Without such help, it is a good deal of a guess-work. The "Complete fertilizers" will not be likely to prove an entire failure in any case. It is true, that we are likely in these to buy a good deal that our soils do not need. If they happen to need all the ingredients, we shall find decided profit in them. It is generally safe to try good guano, or finely ground unburned bones. On the other hand, the "special fertilizers" for particular crops, as made by the best dealers, are very likely to meet the case; and so there is not much to choose, by those without experience of themselves or others as a guide. It is hardly worth while to sit down in doubt and do nothing. "Nothing venture, nothing have." Try experiments, and watch results. Save a year by at once going to work to

Settle this Uncertainty Yourself.

Ask Questions of the Soil! This seems to us as one of the most important things for every farmer to do, and at once—this year, not next. It can be done on a small scale at a trifling expense, or on a larger scale with greater benefit. Suppose we desire to learn which one of six fertilizers will most benefit corn on our soil at the least expense. Selecting a field as nearly like the rest of the farm as we can, and a level plot of uniform soil in that field, we mark it out with stakes, say into seven plots thus:

A	*Superphosphate.*
B	*Muriate of Potash, or unleached Ashes.*
C	*Plaster.*
0	*No Fertilizer.*
D	*Some Complete Fertilizer, or Corn Fertilizer.*
E	*Wood Ashes.*
F	*Barn-yard Manure.*

leaving one plot without manure. These plots may be 2 rods wide and 8 rods long, or 1 rod wide and 16 rods long, which will give one-tenth of an acre to each. Prepare the land well by plowing and harrowing, and work into each plot a given number of pounds of the fertilizers indicated. If the plots be one-tenth acre each, a good plan will be to put upon each plot as much of the fertilizer as $1 will buy at the ton price—or at the rate of $10 per acre. This experiment would thus cost $6. The expense can be reduced either by using smaller plots, or applying less quantity of each of the different fertilizers.

Now plant corn uniformly over the whole, including the "no fertilizer" plot, and treat the whole in the same manner through the summer. Watch the action of each fertilizer, and in autumn test the result by measuring the yield on each plot, and weighing or estimating the fodder. The same experiment may be tried with wheat, oats, potatoes, grass, or any crop most grown on any farm; or the the right or left half of the above plots may be put in one crop, and the other half in some other crop.

This we call putting questions to the soil. And we shall certainly get valuable answers. A comparison of the different plots will tell us *which* of the fertilizers that soil most needed; which one pays best; which, if any, of them pays its expenses or a profit, as compared with "no fertilizer."

Will not such an experiment furnish most important information for future guidance, on that soil, and others just like it, on the same farm? If neighbors having very similar soils also try the same experiments, and obtain the same results, it will be confirmatory. If such experiments be continued two or three years, so as to bring into account the effects in different seasons, we shall get at still more satisfactory conclusions. The experiments may well be varied from our simple plan, by more or less plots, by applying the fertilizers singly, and on some plots mixed two and two, and all together.

We urgently advise every cultivator to make a beginning *this* year. Make some trials, even if it be with only two or three small plots, with one or two of the leading crops, and with the fertilizers most accessible at each place. We are very sure that if only half a dozen farmers in each neighborhood would carry out such experiments for two or three years, the information gained would be worth to themselves and their neighbors a hundred times the cost, and to the country untold millions of dollars.

Important Farm Experiments,

So Simple that Every Farmer can Understand and Make Them—that will Pay those who do Make them, and be of great Value to the Country in the Information thus gained.

We ask every cultivator to read carefully the preceding article. Since writing it, three weeks ago, we have been planning and investigating the subject, trying to devise and arrange for a system of experiments, so simple and inexpensive that every farmer can *understand* and carry them out at a very small expense. The experiments hitherto proposed have usually been somewhat complicated, and expressed in scientific terms and plans, and involved so much expense, that the great majority of plain farmers have been unwilling to undertake them, even when convinced of their importance. We now propose a plan that *all* can take hold of with interest, and profit. Let us premise that we have not a single penny of pecuniary interest in the matter, direct or indirect, and that the cost will only cover actual expenses of fertilizers, bags, and necessary incidental expenses; and further that, besides the large amount of *most useful information* gained by each farmer who makes these experiments, we expect, as a rule, the increase of crop will go far towards, and very often more than meet the expense.

Arrangement for the Experiments.

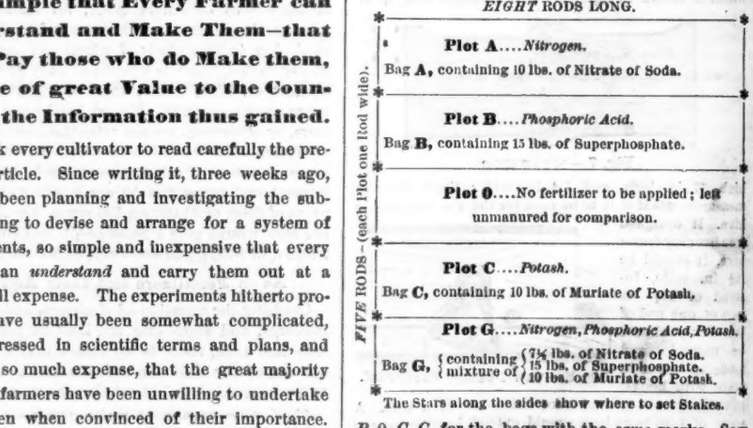
We have arranged a choice of three sets of experiments, as described below. The fertilizers may be obtained wherever any farmer can best get them of reliable and known quality. We have not the slightest preference for any one trustworthy dealer over another, and dealers throughout the country will find it useful for the future, to the public at least, to help forward the enterprise. As we can only undertake the supervision of supplies that are immediately at hand, we have arranged with three leading houses, having depots near us, to put up certain Sets of Experimental Fertilizers of our own planning. (See their names and address on next page.) The different fertilizers are to be put in separate bags. These will be marked, *A*, *B*, *C*, etc. Each bag will have a label showing just what it contains, so that every one will understand it. The smaller bags of each Set are to be enclosed together in a larger one, and delivered, cartage free, to any railroad, steamboat, or express. Those going to Eastern New England, will be shipped in the same way from Boston, Mass. It will be well for several neighboring farmers to combine and have their separate Sets come together in one lot, addressed to one of their number, as freight. It should be attended to *at once*, so as to give time to have the fertilizers put up, forwarded, and delivered, ready to use when the time arrives. We have arranged with Professor W. O. ATWATER, Middletown, Conn., to analyze the fertilizers, and see that they are of pure and standard quality; to furnish printed instructions and suggestions; to prepare a pamphlet telling about the fertilizers, and how to make the experiments, and giving the results of last year's experiments; to watch and report upon the experiments of this year and their results, and help to make them as useful as possible to every experimenter himself, and also to the country at large.

AMERICAN AGRICULTURIST } 1879.
FERTILIZER EXPERIMENTS, }

No. 1.—A Quarter-Acre Plot.

Cost of Set of Fertilizers, in bags, shipped, $3.00.

This will consist of **four** bags, *A*, *B*, *C*, *G*, to be used on four plots. Select a piece of uniform soil, as nearly like the rest of the farm as may be. It can be marked out in any field prepared for a crop. It should be nearly level, so that one plot will not receive the washings from another. When plowed and harrowed well, mark off with stakes, five plots, one for each bag, calling them plots, *A*,


EIGHT RODS LONG.
Plot A....Nitrogen.
Bag A, containing 10 lbs. of Nitrate of Soda.
Plot B....Phosphoric Acid.
Bag B, containing 15 lbs. of Superphosphate.
Plot 0....No fertilizer to be applied; left unmanured for comparison.
Plot C....Potash.
Bag C, containing 10 lbs. of Muriate of Potash.
Plot G....Nitrogen, Phosphoric Acid, Potash.
Bag G, containing 2½ lbs. of Nitrate of Soda. mixture of 15 lbs. of Superphosphate. 10 lbs. of Muriate of Potash.
FIVE RODS—(each Plot one Rod wide).
The Stars along the sides show where to set Stakes.

B, 0, *C*, *G*, for the bags with the *same* marks. Sow each bag of fertilizer uniformly over its own plot; that is, bag *A*, on plot *A*, etc. (the fertilizers are all finely ground and dry).*—Harrow the fertilizers well into the soil, running the harrow lengthwise of the plot, taking care to confine each fertilizer to its own plot. Then plant or sow corn, potatoes, or any other crop over the whole, the same amount on each plot, running rows lengthwise of the plots, and cultivate and treat the whole alike during the season. N. B.—Those who wish, can divide the whole plot across into halves, planting, say corn on the left-hand half, and potatoes or other crop on the right-hand half, so that each crop shall extend across the fertilized strips. It may even be divided into three or four plots, but for so small a plot as ¼ acre, we advise to have only one crop. It is important to select worn out soils for soil tests, that

is, those having only their "natural strength," and little or no richness left from former manuring. The soil must be uniform, or the tests will mislead.

What the Experiment will Tell:

FIRST: By watching the growth, and measuring the gathered crop, it will be easy to see how the crop on that soil is affected by Potash, or by Nitrogen, or by Phosphoric Acid, or by a combination of all of them as provided for in plot G.

SECOND: By comparing each plot with the no fertilizer plot 0, it will be easy to see which fertilizer pays expenses, or a profit, and which pays best.

THIRD: Such an experiment will be interesting, will stimulate thought, and prepare for more extended investigations. If there are boys on the farm, it will awaken interest in their minds, and be a good agricultural school, on a small scale, at home. The pamphlets sent with each Set will greatly help in this.

FOURTH: It will be a good step towards helping each experimenter to decide for himself, and for his neighbors, *what* fertilizers, if any, they can go into more largely in the future. (We do not discuss here, the effects of the season, the after effects next year, nor other special circumstances that may vary the results in any one set of experiments, etc. These are matters that we will talk over while the experiments are in progress during the summer. What we *now* want is for farmers, generally, *all of them*, to go to work and put in practice such a set of most valuable and important experiments.)

AMERICAN AGRICULTURIST } 1879.
FERTILIZER EXPERIMENTS, }

No. 2—A Half Acre Plot.

Cost of Set of Fertilizers, in bags, shipped, $5.00.

This will consist of **eight** Bags, *A, B, C, D, E, F, G, H*, to be used on ten plots. *This is of course a much better Set than No.* 1. It includes all of No. 1, and four more. We have, first, the three ingredients singly in *A, B, C;* then we have them in mixture *two* by two in *D, E, F*, to see their effects when used in pairs; then all three together in *G*, and finally Plaster in *H*. Select the soil as for No. 1, and treat in the same way. Lay it off thus:

EIGHT RODS.

Plot O....
No fertilizer, for comparison.

Plot A....*Nitrogen.*
Bag **A**, containing 10 lbs. of Nitrate of Soda.

Plot B....*Phosphoric Acid.*
Bag **B**, containing 15 lbs. of Superphosphate.

Plot C....*Potash.*
Bag **C**, containing 10 lbs. of Muriate of Potash.

Plot D....*Nitrogen* and *Phosphoric Acid.*
Bag **D**, { containing 7½ lbs. of Nitrate of Soda. / mixture of 15 lbs. of Superphosphate.

Plot E....*Nitrogen* and *Potash.*
Bag **E**, { containing 7½ lbs. of Nitrate Soda. / mixture of 10 lbs. of Muriate of Potash.

Plot F....*Phosphoric Acid* and *Potash.*
Bag **F**, { containing 15 lbs. of Superphosphate. / mixture of 10 lbs. of Muriate of Potash.

Plot G... *Nitrogen, Phosphoric Acid, Potash.*
Bag **G**, { containing 7½ lbs. of Nitrate of Soda. / mixture of 15 lbs. of Superphosphate. / 10 lbs. of Muriate of Potash.

Plot H....*Plaster* (10 lbs.)
Bag **H**, to learn the effects of this fertilizer.

Plot OO....
No fertilizer, for comparison.

TWENTY RODS.—(each Plot two Rods wide and eight Rods long.)

NOTE.—It will be a good plan to add other similar Plots, and apply on them severally, stable manure, lime, and any other fertilizer at hand, for making a comparison.

Take note, that the above is very simple. The bags are all of accurate weight, with standard fertilizers of known quality and composition, and all the experimenter has to do is to mark out the plots, and use the bag marked for each plot. The result in the growth and in the yield will indicate what each fertilizer will do, on any soil for the crop or crops grown, also what any two of them will do if used together, and what all will do used together. The different materials in each bag are thoroughly mixed and prepared, so that they have only to be sown without further mixing or care.*

AMERICAN AGRICULTURIST } 1879.
FERTILIZER EXPERIMENTS, }

No. 3—One Acre Plot.

Cost of Set of Fertilizers, in bags, shipped, $8.30.

This is the same as *No.* 2, except that the quantity in each bag is *doubled*, for plots of double size (one-tenth acre each). As the expense for bags, putting up, shipping, etc., will be the same, for each set, the double amount of fertilizer put in will cost only $8.30, instead of $10. With larger plots, more valuable results will be obtained, and more than one crop can be tried. The expense of the fertilizers, $8.30 per acre, will very likely be more than returned in the increased crop on a part of the plots. We strongly advise all who can to try Set *No.* 3. (This Set No. 3, is the same as the Set *A* of last year, with the No. XIII. of 1878 added. Those who experimented last year, and desire to repeat the same trials, can obtain the Set A of 1878.

How the Fertilizers are Supplied:

We invited the leading dealers in fertilizers to meet at the *American Agriculturist* office, and laid before them our plans, and invited them to coöperate with us. They were informed that no profit would be provided for, but we wished them to put up the samples according to our plan and forward them *at cost*, and asked them to do this as a public enterprise. For reasons named above, we could not extend the invitation to points outside our immediate observation. The following parties entered heartily into the arrangement, agreeing to equally share any extra expense of printing, cartage, shipping, etc. (It was estimated that they will have to pay for cartage and shipping each single set 50 cts. or more, in addition to cost of fertilizers, bags, carefully weighing, putting up, labeling, etc.—freight not included.)

Henry J. Baker & Bro., 215 Pearl St., New York.

Bowker Fertilizer Co., 43 Chatham St., Boston, and 3 Park Place, New York.

Mapes' Formula & Peruvian Guano Co., 158 Front St., New York.

All of the above houses will put up precisely the same articles. Prof. Atwater, in *our* behalf, will look after the quality, purity, and composition of the fertilizers, and test them by chemical analysis.—Our readers can send their orders direct to *any one* of the above parties, or they may be sent to the office of the *American Agriculturist*, and we will hand them to the dealers; we will send those to Boston which can be forwarded most cheaply from that point.—We receive not a penny for this, directly or indirectly, and only ask that correspondence and remittances on this subject be in a separate letter, distinct from other business, and save us as much as possible from correspondence.

*Quality, etc., of the Fertilizers.—The NITRATE OF SODA, to be sent in the bags, is to be guaranteed to contain 95 per cent of the pure salt. This will yield 15½ per cent of *Nitrogen*....The SUPERPHOSPHATE is to be guaranteed to contain 15 to 16 per cent of *soluble* phosphoric acid. We do not take into account the reverted and insoluble....The MURIATE OF POTASH, is to be guaranteed to contain 80 per cent of the pure salt, corresponding to 50 per cent of actual potash....The Plaster will be of the best quality of that article. *The Per Acre Applications*, provided in the bags for Sets Nos. 1 and 2 above, with the cost per acre at the present ton prices of the Articles will be about as follows:

Rate per Acre.	A lbs.	B lbs.	C lbs.	D lbs.	E lbs.	F lbs.	G lbs.	H lbs.
Nitrate Soda	200	....	....	150	150	..	150	....
(*Supplying Nitrogen.*)	31	....	....	23	23	....	23	....
Superphosphate	....	300	....	300	.....	300	300	....
(*Sup. Sol. Phos. Acid*)	....	45	....	45	.....	45	45	....
Muriate Potash	....	....	200	.....	200	200	200	....
(*Supplying Potash*)	....	....	100	.....	100	100	100	....
Plaster	....	....	....	.....	.....	....	....	200
Cost per Acre...	$7.50	5.25	4.00	10.87	9.62	9.25	14.87	80c.

Science Applied to Farming.—I.

MORE ABOUT THE FARM EXPERIMENTS WITH FERTILIZERS.

Instead of continuing from last month (page 91), the details of the Experiments of last year, of which full accounts are given in the Report of the Conn. Board of Agriculture for 1878, now in press, and in a pamphlet to go to the experimenters of last year and this, the Editors desire a summary of the main results, and suggestions for this year's work.

RESULTS WITH CORN.

1. In general, the complete fertilizers containing nitrogen, phosphoric acid and potash, brought better results than even farm manures, as the latter were used. In the experiments with corn, on soils good, bad, and indifferent, but mostly very poor, the average yield with 150 lbs. nitrate of soda, 300 of dissolved bone-black, and 200 lbs. muriate of potash, No. VI. (the same as No. G, of sets proposed this year), was 48.6 bushels of shelled corn against 45.9 bushels with the farm manures. Taken singly, the phosphoric acid was decidedly the most efficacious. The corn responded well to the superphosphate, No. II. (B, of this year's sets), in nearly all the trials. In some it paid little heed to anything else. The potash salts, No. III. (No. C, this year), were more or less effective in perhaps two-thirds of the trials. The nitrogenous fertilizers paid their cost in only 9 trials out of 53. The average loss was larger or smaller in proportion, as more or less nitrogen was used. The mixture of superphosphate and potash, No. F, was the most profitable for corn. With this the crop averaged 43 bushels per acre, and gathered so much nitrogen for itself that if the corn were fed out on the farm it would contribute more nitrogen to the manure than could be bought for the whole price of the fertilizer. The corn experiments have given more light on the feeding capacities of that crop, and the effects of different fertilizers upon it, than all the other data I have ever been able to gather from home or foreign sources, and I feel certain that the light to come from future work in this line will be still more valuable.

RESULTS ON POTATOES—GENERAL CONCLUSIONS.

2. With POTATOES, the comparative yields were still more favorable for the chemicals, as compared with farm manures. The complete fertilizer, in the trials reported, averaged the most profitable. Potash showed good results in nearly every case.

3. If I had to prescribe fertilizers for general use, on the basis of last year's experiments, I should say for Corn: a mixture of superphosphate with potash salts, and for Potatoes, the same, with the addition of some nitrate of soda. But I offer no such prescription; because of the difference in soils, and the need of more knowledge about the feeding capabilities of the plants.

4. The experiments confirm me in the belief that the proper policy, after making as much and as good manure as possible on the farm, is to piece out with superphosphates, bone, guano, potash salts, or other materials, such as the experiments and experience show to be most profitable on each farm.

5. The experience of two seasons confirms me in the belief that the experiments rightly conducted do serve the purpose for which they are proposed. The men who are respected as authorities in agricultural chemistry the world over, unanimously recommend them, and continue to do so year after year. Of the ways the results sometimes differ from what is expected, and the ways of interpreting them, I shall speak hereafter.

6. A number of last year's trials failed of their purpose, because they were made on land already in very good condition. "Worn out" soils, those that have only their "natural strength" to rely upon, are the ones to work on. Such a soil will be apt to do next year what it does this with the same manure. But if the soil has a store of available plant-food, accumulated from its own resources or left over from previous manuring, we can not tell how much of the yield is due to that and how much to the fertilizer. Another important point

is to make sure the soil is even. The object in duplicating the unmanured plots is to test this.

THE EXPERIMENTS FOR 1879.

Of the experiments proposed by the *American Agriculturist*, my very decided preference is for Set No. **3.** This is the same as Set *A* of last year, except that it has the mixture of Nitrogen and Potash, No. *E*, which that lacked. This provides for tenth acre plots. Next to Set No. **3,** I should by all means recommend Set No. **2,** which is the same as No. 3, except it is only half the size, *i. e.*, for one-twentieth acre plots. The sets, by the way, are essentially the same recommended by Wolff for soil tests. I earnestly hope that as many of last year's experimenters as possible will repeat their trials this year. I trust, too, that all will inform me of matters of especial interest or about which they are in doubt. I will try to find time to answer their letters, though it may be impossible to do so as soon as they are received. So let us look for a good season's work together.

W. O. ATWATER.

Wesleyan University, Middletown, Conn.

Sundry Humbugs.

We will not attempt to discover why our budget of Humbug documents is so overwhelmingly devoted to lottery matters this month, but the fact is patent. Our accumulated material from all sorts of sources is usually in some sort an index to the prevailing moral disease. In this case, we are glad to state that excess of lottery by no means stands for success with that form of iniquity. Probably owing to the fact that the lottery under some name or or form is even at this day tolerated where it should not be, people in general are slow at accepting the fact that all lotteries are wrong in principle—a point that we have discussed in former volumes, and will not dwell upon now. Every now and then some good-natured person is astonished by finding himself the recipient of an attractive lottery scheme. He is rather disgusted, quite surprised, and at length satisfies his conscience by enclosing it to us with a note saying:

"IF THIS IS A HUMBUG, SHOW IT UP."

A very proper thing to do, though every reader of the *American Agriculturist* should by this time know that in such a case there is *no* "virtue in *if*." While a lottery may be honestly managed, i. e,, with only the wrong inherent in the scheme, which makes one lose money without cause that others who have done nothing to deserve it may gain it, yet they rarely are so, and those that seem to be surrounded by all sorts of safeguards—such as in some States the influence of ex-generals, and in others the names of judges, governors, and bishops—can be, and often are, converted into swindles. There is but little of our territory at present in which the lottery is not illegal. Pattee and his crew no longer ride high horses in Kansas and Wyoming. Being driven to the very frontier settlements; the lottery crew left the track of the "Star of Empire," and migrated to the Provinces. For a while the mails from New Brunswick, Nova Scotia, and there away, were teeming with flaming schemes—some were "Lotteries," some were "Distributions," some were "Concerts," but all with the prefix "Royal," and it must have astonished the Royal coat of arms to find itself pouring into Yankeedom at such a rate, as the figurehead of such a "Royal" lot of swindlers. For some months we have heard but little of the "Royal" schemes. All at once there is this sudden irruption, but—this sign of revival is

REALLY A CRY OF DISTRESS.

Among the several fancy names for the lottery in New Brunswick—for we suspect that, as under the Kansas and Wyoming dispensation, names are more numerous than things—one of the most prominent, is the "*Royal Gift Soirée.*" We always did like that name—it is so *récherché*, not to say *comme il faut*. "*Soiree*" so nicely balances "Royal." "Royal Gift Concert" is loaded by the head, but in "*Royal Gift Soirée,*" the *toute ensemble* has a tip-top *je ne sais quoi*. *Soirée* was a happy thought, and its pronunciation is fixed by the high authority of Mr. S. Weller, Jr.—"swarry." We have had rather a fancy for this "Royal Gift Swarry"—it sent out so much stationary and such a variety; there are Monthly Swarrys, which give out hundreds and thousands, just to keep its hand in, and then there are the Quarterly Swarrys, where millions are "dispensed with" in truly "Royal" style. Then it mentions great names, one a "Justice of the Peace," and another a "Sheriff." Then the Royal Coat of Arms heads the papers. There are "the Lion and the Unicorn a fighting for the crown." To the outsider every thing looks bright. The Lion roareth and the Unicorn paweth just as if the swarry had no trouble—but the "swarry" is not happy. The swarry is not the first manifestation of Royalty troubled with impecuniosity. It doesen't advertise that

"BUSINESS IS GOING TO THE BOW-WOS,"

but it does write to its agents that something must be done to increase the sale of tickets—and it deliberately asks its agents to join them in a fraud—to unite with the concern in making the public believe that something happened which never did happen. In short, this "Royal Gift Soiré" concern of New Brunswick proposes to

HIRE ITS AGENTS IN THE U. S. TO LIE FOR THEM.

We give the space to this case, because it shows what may happen in *all* lotteries, and does happen in most, and because as it is sometime since we have had much to say about lotteries, our letters show that our new readers should not be in any doubt as to our position in relation to them. That we may not misrepresent this "Royal" concern, we quote its letter to its agents, verbatim, the italics being our own. It is dated at the

"OFFICE ROYAL NEW BRUNSWICK GIFT SOIREE.

Dear Sir.—The Managers are satisfied some extra inducement must be given, in order to *increase the sale of tickets.* —Therefore they have decided to have a separate drawing, and distribute a large number of Prizes among *their Agents* in different localities, some of $100, some $200, some $500, some $1000, etc. Every ticket in this Special drawing for *the benefit of Agents will win a prize;* none of these tickets will be sold, but if you will introduce their new and popular 50-cent tickets in your locality, by selling six tickets in the regular drawing of March 10th, Capital Prize $10,000, and remit $3, we will send by return of mail six tickets, and also one of the special prize tickets free of cost, which *insures you a prize,* or we will send the tickets and you remit when sold.—When you remit state if you will allow us to *publish your name* and the amount of Prize drawn by you, as it might *benefit our sales* more than $5000 spent in advertising. —Write immediately if you desire to win a prize. For full particulars, Tickets, &c., address our authorized Agent" (whose name and address on Broadway, N. Y., is given).

THESE ARE "EXTRA INDUCEMENTS"

to agents to increase the sale of tickets. But how do they read by the side of another document put out by this same "Royal Gift Soirée," not to its agents, but a

"NOTICE TO THE PUBLIC."

We give the language of the "notice," omitting such dates and figures as do not affect or change its purport:

"These Grand Soirées and Distribution of Cash Gifts are under the managment of Hugh McKay, late Chief of Police. Therefore, from the start, honesty of management and success were assured. * * * The fairness and strict integrity of these Gift Soirées, under the management of Hugh McKay & Co., cannot be doubted or questioned, and the magnificent Schedule of Gifts and honorable management make it a favorite investment with the public, as the amount is but a trifle compared to the gifts. Every one has confidence in the integrity of the management...."

Every now and then, notwithstanding the publicity that has been given, and our repeated warnings:

"FARMERS, BE CAREFUL WHAT YOU SIGN,"

cases come to our knowledge, of much trouble and expense resulting from the carelessness of farmers, who, supposing that an address was being given, or some simple agreement signed, have found that they had placed their names at the bottom of a *promissory note* for a considerable sum of money. Generally the rascals sell the note at once, and the farmer is often sued for the amount by the holder. In a case at Northampton, Mass., in February last, it was not a farmer who was sued, but two Hunters, one Lord, and one McKinney—all four were sued for swindling Austin Waite, and were put under $1,000 bonds each to appear for trial in June next. It was a case of getting an order for mowing machine grinders, when Waite supposed he was only giving his address. If farmers only stand firm in such cases, they can soon rid the country of swindlers of this class.

CHEAP PIANOS.

Some parties offer a piano for $5. Others for the cost of packing if one will send the names of 20 persons who have no piano or organ but are likely to buy one—and our opinion is asked in such cases. We should not suppose it necessary to write for an opinion. Unless in some extraordinary cases, an article does not sell for a great deal more, or a great deal less than its real value. If these instruments are really worth $2.50 or $5 each—that is the end of it. We do not understand that a $500—or even a $50 piano is offered for $5. If one has room for a $5 piano, or can make any use of it when he gets it, he very likely can get as good a $5 piano in the cases inquired about as he can *anywhere!*

THE REAL VALUE OF A BOOK

depends upon many things. A work on the propagation of plants is advertised for sale at 50c. Several nurserymen have written that they have bought the work, and feel that they have been badly swindled. Perhaps, as they knew all that the work contained, and more too, they had no use for it; but suppose they had no previous knowledge of the subject—as the majority of people have not. Some single directions may have been worth many dollars. We preferred not to accept an advertisement of the work, when shown to us, for fear of just such disappointments, yet the information to one who needs it, is of real value. One of the best investments ever made by a large sign-painting firm in this city, many years ago, was to pay a man in Jersey City $600 for his secret preparation, by which he applied gold leaf in some kind of gilding. The man received the $600, took up a piece of glass, licked it with his tongue, and the gold-leaf adhered beautifully—"saliva" was his secret, and it proved to be worth the sum to the others to know it.

A DICTIONARY MATTER.

A man by the name of Hunt in a small town in Massachusetts is engaged in a very small business. He would no doubt like to have us give his address, but we are not in that line. He fills a postal card full of printed matter. It is headed,

SPECIAL OFFER { To the Readers / of this Card. } $6.00 for 56 cents.

Then it goes on to describe, "The Illustrated Dictionary—22,000 Words, 250 Engravings; handsomely bound in cloth, etc., etc.—The conditions are. "If you will return this card, together with the names and addresses of 10 or 20 young gents, from 13 to 22 years of age, and 56 cents to pay mailing, packing, and other expenses, we will send you by mail, post-paid, the Illustrated Dictionary." "The above liberal offer holds good for 30 days only after receipt of this card," etc. Now this may be a device for

PROCURING NAMES FOR SALE—

as various methods are resorted to. He addresses himself to a common class, when he asks for the names of "young gents." No gentleman, young or old, would take such liberty with the name of another gentleman, to an unknown and suspicious person, for an unknown purpose. "Young gents" are unknown among decent people. After all it may be only a small money-making dodge. Hunt's card costs him perhaps two cents. He asks for 56 cents, and he will send that "Illustrated Dictionary." It is 5¼ inches long, 4 inches wide, and ¾ inch thick. It has 320 pages of fair paper, looks neat, is decently bound. No name of author or publisher is given. Probably Hunt can send them for the price named, and make 25 cents on each. The chief deception is in saying or rather offering $6.00 for 56 cents.

TWO FAMILIAR FEATURES

have well-nigh disappeared from our budget. Now and then there is a solitary inquirer after that Secret Service affair. And we are encouraged to hope that Jones has found the most of his cousin.

MEDICAL MATTERS.

We would say to our friends as kindly as possible, that we cannot afford the time to answer queries about advertised medicines or advertising "doctors." Sometimes we have a dozen letters a day like the one before us. The writer is evidently anxious—has a friend he would benefit, sends us return postage, and *expects* a letter, and from the Editor. He would feel slighted were a clerk to write him. We can not find it in our heart to disappoint such, yet we know that we can not help him, and a printed reply would answer every purpose. So, evening after evening, much time goes to replies of this kind. The letter, we take for an example, contains an advertisement cut from some journal. The writer's friend has a girl who has fearful fits. The promises of this advertisement are caught at, and we are appealed to—what can we do? Such persons will not apply a general rule, and when we say we cannot commend *any* advertised doctor or cure, seem to think the case in which they are interested may be an exception. This "Fit Curer" says: "I warrant my remedy to cure the worst cases," which shows as plainly as could a whole volume what sort of a man *he* is.

Artificial Butter, How Made.—"J. C. M.," Almont, Ia.—The process for making artificial or oleomargarine "butter," is too complicated and not of sufficient importance to be described in detail here, as of course none of our farmer readers would go into the business. The outlines of the process are as follows: The oil is separated from the caul-fat by "rendering" in large tanks, and then, after passing through some refining process, is mixed with a little partially sour milk, coloring matter, and an alkali. The mixture is run over ice to remove the "grain," and is afterwards churned with about its weight of sour milk, in order to give the product something of the flavor and appearance of butter.

Three Months Yet.

The List of Good and Valuable Premium Articles is still open, and will be so for three months longer. The month of April is a good time for completing Clubs which may have already been begun, and for making up new Clubs, large or small. Remember that it costs no money, and takes but little time to secure one or more of these valuable Premiums. We can not spare space to give even the catalogue of the articles, but will be happy to send a list, with full description of each article offered, to any and every one desiring it, who will simply give us his or her address by postal card, and say on it, "Send me Illustrated Premium List." Over 20,000 of our readers have received these premium articles with great satisfaction. Thousands may do the same THIS MONTH.

The New Compound Microscope.

A Most Valuable Instrument at a Very Low Price.—It has a heavy Iron Stand; the Body turns on pivot to any position from perpendicular to horizontal; has finely working Rack and Pinion for adjusting focal distances; double lens Eye-Piece, working in draw-tube; two excellent Object Glasses, to be used singly or together, and nearly achromatic; fine large hard-rubber Stage, with diaphragm having different apertures; Mirror adjustable below and above for transparent or opaque objects—in short, for almost all practical purposes, it is as valuable as the $50 to $100 instruments. It has a magnifying power up to 125 diameters, and a most valuable Camera Lucida. We have now succeeded in securing a **Compound Microscope,** that will surely give *great satisfaction* to all who can use any such instrument. It is a wonderful combination of the important elements of an instrument costing five to ten times the price at which this will be supplied. A *Camera Lucida* attached enables one to throw upon paper a greatly magnified image of objects invisible or nearly so to the unaided eye, and to sketch them accurately. Thus, for example, the foot of a fly or other small insect can be thrown upon paper and be sketched as large as one's hand.—We know of nothing else that would afford such a perpetual source of interest and instruction, to young and old. We can not spare the space to give anything like a full description of it, *but we will send to any one desiring, a descriptive illustrated pamphlet.* It is recommended in the highest terms by such eminent men as Prof. Gray, of Harvard, and others. Prof. SPENCER F. BAIRD, Secretary of the Smithsonian Institute, happening to see one of these Microscopes, expressed the highest satisfaction with its working, and immediately purchased one for the Institution.

Last year we offered a **"Simple Microscope"** to our readers, at a low rate, much less than its actual cost to us, though it was manufactured in large lots (5,000 to 25,000) with newly devised machinery that reduced the work very greatly. It was only offered as a *Simple*, 3-lens Microscope, and it gave great satisfaction to many tens of thousands of people. After thorough testing, it was adopted for classes in Colleges, Seminaries, Academies, etc., and it is largely sold now, at $1.50 retail. (We supply it to our subscribers wanting it *this year* for 50 cents at the office, or 70 cents delivered free anywhere in the United States. To all others than actual subscribers the price is $1.50.)—But a few subscribers were disappointed in it. Some had formed exaggerated and unwarranted expectations; they expected to simply look into it and see monsters. Others, through lack of mechanical skill, and especially *from failure to carefully study and apply the directions*, did not learn *how* to use it, and appreciate its merits, and laid it aside in disgust. This was their fault, and not ours. We can *show* any one that it was and is all that was claimed for it, and *more*; that it is more convenient and effective for good use and service than anything ever before offered for five times the money. We hope all who failed to value it highly, will again get out the chapter of directions that accompanied each instrument, (or send a stamp for a new one if the former one was lost,) and study the working of the instrument until they learn its value. Every one of these Simple Microscopes *ought* to be in frequent use; every one of them should be affording enjoyment and profit.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

This Paper Contains:

Two important chapters on fertilizers and experiments, pages 127-129, deserve immediate attention, as early action should be taken....Two Garden items, page 141, to be examined and thought about at once; also Green Peas and plenty of them, see page 144. Look after the Salsify, page 145. While turning to these, some garden implements will be noted on page 142, etc....The "One Grapevine," page 145, is important to everybody not already supplied....As to flowers, see Flowering Blackberry, page 143; the Pæony, page 144, and the Star Anemone, page 145. .. The difference between bullock beef, and well fed, is similar to that between some ordinary poultry and nice Capons; but capons are as easily produced as steers, and how to do it is fully explained on page 139... .Guernsey Cattle and their characteristics are clearly described, with illustrations, page 135....Sundry hints and helps to farmers and others, with numerous engravings, on pages 137, 138, 139, 140, 141, etc....Wood-carving at home is becoming popular among ladies just now; our new contributor, "M. G. E.," begins a talk on the subject, page 145....Housekeepers will find their specialties on pages 146-7....The "Doctor" is leading the little folks, and doubtless not a few of larger growth, in some of the simple paths of useful knowledge, pages 148-9 ...The "House-Fly," its origin, mode of life, etc., etc., are brought to your acquaintance on page 149 ...Pearls, where they come from, and how, will be enjoyed by all who are not familiar with the subject, as few are. See page 150....The "Metric System" of weights and measures will be *the* system everywhere, as soon as the mass of people understand its simplicity and value. It is fully explained on page 148...."Prickly Comfrey" bids fair to become a staple fodder crop. See page 136, and the previous two papers....The first page speaks for itself, in the picture and description of an interesting breed of poultry....The Hints on Work for the Month, for farm, garden, orchard, etc., will be reminders of some things that might be omitted or neglected, and probably afford new suggestions to some at least....A fine Compound Microscope is offered. Several illustrated articles are crowded upon page 134....Prof. Atwater gives some lessons from last year's Farm Experiments on p. 129.... Many other useful items will be found scattered through the pages....See "Three Months Yet," on this page.

If You Want Anything not yet provided for the Spring—any seeds, plants, trees, implements, or anything else, almost—it will be well to look through the business pages of this paper. The April number is always crowded more than any other month, and more this year than before since the panic of 1873—one of the indications of reviving business activity. We have added 4 extra pages (48 in all) to make room for these without trenching upon the reading columns. Our readers will find the business cards of a great number of trustworthy dealers; we try to admit no others—hard as it is in these times—when everybody wants a paper below cost—to send away large sums offered for advertisers and advertisements that stand just on the dividing line between reliable and questionable, and which come endorsed as "admitted into the religious papers, etc." It is, of course, pleasurable to show the door to recognized swindlers, quacks, quack medicines, and the like.

If You Don't Want Anything, still it will always pay to go all through the advertisements, to see what is offered, how it is offered, when and by whom, at what price, etc. One can hardly do this, without gathering, insensibly perhaps, some hints and suggestions that will be useful in the end. Multitudes of new inventions and new thoughts have originated from reading over what others have done and are doing. As a source of general information, the business columns, filled with a great variety of descriptions, etc., are often as useful as the reading pages....We repeat the standing suggestion, that in writing to any of these men, or ordering, or sending for catalogues, circulars, or information, it is well to let them know that you belong to the great, wide-awake *American Agriculturist* family. It will please advertisers and perhaps stimulate them to extra care in pleasing you.

"Let the Mud Dry First."—Here is a capital lesson, that may well be impressed upon the memory of both young and old: Mr. Spurgeon, in walking a little way out of London to preach, chanced to get his pantaloons quite muddy. A good deacon met him at the door and desired to get a brush and take off some of the mud. "Oh, no," said Mr. S., "don't you see it is wet, and if you try to brush it now, you will rub the stain into the cloth? Let it dry, when it will come off easy enough and *leave no mark.*" So, when men speak evil of us falsely—throw mud at us—don't be in a hurry about brushing it off. Too great eagerness to rub it off, is apt to rub it in. Let it dry: by and by, if need be, a little effort will remove it. Don't foster scandal about yourself or others, or trouble in a society, or in a church, by haste to do something. Let it alone; let it dry; it will be more easily eradicated than you think in the first heat of excitement. Time has a wonderful power in such matters. Very many things in this world will be easily got over by judiciously "letting them dry."

A Milk and Butter Record.—The great and rapidly growing dairy interests of this country, have been several times spoken of and illustrated in recent numbers of this journal. As the success of farming depends largely upon having good land, and of manufacturing upon having good machines, so the success of dairying depends a great deal upon having good cows. The cow is the machine that changes grass and other feed into butter and cheese. While some cows will scarcely do more than pay their keeping, if they do that, others are very profitable, because they have the ability to produce double the result from the same feed and care. The improvement of our herds of cows, is, therefore, one of the more important subjects now before American farmers. Our contributor, "Among the Farmers," gives suggestions on this topic (p. 136), that will be read with interest.

A Most Desirable Residence, with very superior Educational advantages and Society; fine surroundings; in a delightful New England City-town; a capacious, first-class Residence, etc.—3¾ acres, within; but overlooking the City, and with splendid views. To Rent, Well-Furnished, to desirable Family, on very reasonable terms, for a year, more or less; or for sale low on easy payments. Address "New England," care of this office.

The Kansas City Book and News Company, of Kansas City, Mo., supply the publications of the Orange Judd Company in Missouri, Kansas, Arkansas, and adjacent States and Territories. Not only those who are already on the ground, but the large numbers of new settlers who are now emigrating to that region, will find these Agricultural publications of a very valuable character. Every farmer going to Kansas City should visit the City Book and News Company, and inspect the Agricultural publications there.

The American Plant-Book, by Harlan H. Ballard and S. Proctor Thayer, is a valuable book for the convenient preservation and analysis of pressed flowers, ferns, leaves, and grasses. It gives explicit directions for gathering, pressing, and mounting, and will be found exceedingly useful for those fond of work of this kind. Daniel Slote & Co., New York, publishers.

Information about Sheep.—"W. W.," Lyon Co., Minn. To give the history of several breeds of sheep in these columns, would be obviously impossible. That information can be procured in full in Stewart's Shepherd's Manual, in which the various breeds and crossing them for the purpose of improvement are discussed.

Lambs in Market.—"A. B.," Beaver Co., Pa. A lamb is a lamb in the market, until it is a year old, or until the spring lambs of the next season arrive; the price of the new arrivals is then the highest, and quotations gradually fall until in winter they are the same as for sheep. A fat lamb may come from Virginia or Kentucky, without appearing gaunt or empty; thin ones cannot.

The Great Walking Match, so-called, though the contestants walked or ran as they preferred, and did both, has excited no little attention throughout the country. Enough people about New York were interested, to pay $51,000 gate-money. If such contests would result in getting all into a regular and continued habit of healthful exercise in walking, the effect would be beneficial. We attribute not a little of our health and muscular vigor of later years, to such walking as is afforded by following a smart pair of horses drawing a harrow, all

day. That is walking to a purpose, while supplying all the leg exercise that one desires—usually a little more. If a betting man, we should lay our wager on one of our farmer boys, or men, accustomed to plowing and harrowing, if pitted against any of the tens of thousands of youngsters now measuring steps around the limited tracks of multitudinous city and village hall floors.—We have yet to learn the utility there is—if there is any—in putting any human being to the terrible strain of going 500 miles or more on foot in less than six days. Railroads and telegraphs have done away with the necessity of swift couriers of enduring strength.—The most important lesson we can gather from the recent contest is this: Rowell, the champion, took no alcoholic or other stimulants from the beginning to the end, except a single glass of weak champagne; he ate freely of beef and other nourishing food, drinking with it only very little water. More would have diluted the gastric juice of the stomach, and retarded digestion. The thirst induced by the violent effort he slaked by frequently sucking the juice of an orange, using 15 to 20 of them a day. Weak and dyspeptic persons may well note this....The other contestants in the match, or their trainers, did not understand it in time, and we may thank our English visitors, Rowell's trainers, for this practical lesson....We give the following figures, which show what men *can* endure, with the remark that to go a mile requires 1760 steps of a yard each, or 880,000 such steps to go a distance of 500 miles.

	Rowell, 500m.	Ennis, 475 m.	Harriman 450m
Total, Time.....	139h. 56m. 35s.	141h. 0m. 57s.	139h. 46m. 40s.
Rested.....	37h. 41m. 20s.	35h. 26m. 30s.	31h. 32m. 41s.
Walked.....	102h. 15m. 15s.	105h. 34m. 27s.	102h. 13m. 59s.
Av. time per m.	12 min. 16 sec.	13 min. 20 sec.	13 min. 32 sec.

The Champion Reapers and Mowers.—We have before called attention to the peculiar features which distinguish these Mowers and Reapers, and have given a detailed illustration of the movement upon which their distinctive character is founded. The makers set forth other claims of their machines in the advertising columns. One of these, the Dynamometer test, that is, the amount of draft power required, is worthy of consideration by all interested in farm machinery, or about to purchase a Mower or a Reaper.

To Feed a Cow upon One Acre.—"C. B. J.," Providence, R. I. One acre will not pasture a cow; but it will easily produce green fodder sufficient by growing the right crops. Proceed as follows: Dress three-quarters of an acre early in the spring with 150 lbs. of Peruvian guano, and 150 lbs. of plaster. As soon as the grass starts, the cow is to be tethered on this piece and fed by advancing the tethering-pin as shown in the annexed figure. Each point is supposod to be 20 feet from the other, the dotted lines show the piece fed off each day. The remaining quarter of an acre may be plowed and sown with oats and peas in plots at intervals of ten days apart. This will give feed for 40 days, allowing one square rod per day. Then a portion of the piece pastured down may be plowed as soon as ready, and planted with sweet corn in drills, to be cut for fodder, and the cow pastured upon more ground, or the grass may be cut and fed to her, which will be better. Then more corn should be sown, until half an acre is planted. As soon as the oats are ready, they should be used, taking them off in strips which can then be plowed and early cabbages be set out, or Hungarian grass be sown. As each crop is cut, another should be put in, using the cow's manure for fertilizer, or any other that can be procured; but the ground must be rich. In June, plant mangels for fall feeding, and in August, some turnips; oats may be sowed in July for late cutting. By this system, a cow may be fed all summer, and enough fodder saved and cured to keep her through the winter. A quarter acre is to be kept in grass. The experience of one or two years is necessary to carry through such a course of feeding successfully.

Satin Polish Shoe Dressing.—We supposed that the French excelled the world in all that relates to Blacking and Leather Dressing, yet it appears that the "Satin Polish," a Yankee affair, received the highest award at the Exposition, and one of our associates, who has long used it, approves of the award.

A NEW PREMIUM—And a Pocket Revolver, Cheap.—So many write us for good, low-priced revolvers, that we have arranged to supply those who want them, thus: 1st—A first-rate steel-barrel and lock, *nickel-plated*, 7-shooter **Revolver,** Calibre 22-100. Made at the celebrated Remington Arms Works, weight 7 ounces. It is as good as any made for anything like the money, and good enough for anybody who wants such an implement. We have fired one 100 times, and found it work perfectly. It will be sent free to any part of the United States, post-paid, by mail, to any one sending only 5 subscribers to the *American Agriculturist*, at $1.50 a year, or 10 subscribers at the 4-club rate of $1.25 a year. [Or it will be forwarded free by mail, on receipt of $2.50. It is as good for use as any $5 or $10 revolver of like calibre.] **2d.**—A larger 5-shooter Revolver, nickel-plated, calibre 32-100, weight 11 ounces, will be presented for 7 subscribers, at $1.50 each, or 12 at $1.25 each, delivered free, as above. [Or it will be forwarded free, as above, on receipt of $4.]

White Leghorn Eggs.—"B. W. S.," Providence, R. I. Your not distant neighbor, Eugene B. Pendleton, Westerly R. I., can furnish you eggs of excellent strains. His birds have taken prizes at fairs, and he is one of those dealers, who give attention to the character of his stock.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members: or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Bound Copies of volume 37, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Borax for Preserving Butter.—An Italian paper reports that experiments have been conducted at the Experiment Station at Florence for testing the preservative properties of borax on butter, with remarkable results. Samples of fresh butter were taken and manipulated with about 1¼ ounce of pure borax to each pound of butter, and after three months' time it was found to have retained the natural flavor without any change whatever, nor had the borax imparted the slightest taste to the butter. The borax used for this purpose must be perfectly pure, and reduced to a fine powder, then mixed thoroughly with the whole mass of the butter. It may be well to try this in a small way, but we can not recommend it as a general practice until it has been thoroughly tested by careful experimenters in this country.

Potato Bug Poison—London Purple.—Paris green has thus far been the accepted poison for the Colorado Potato Beetle. Paris green was known as a pigment long before the Potato Beetle was heard of. In the course of certain manufactures a compound of arsenic is produced to which the makers have given the name of "London Purple." It is not offered as a secret remedy, but as a highly poisonous compound of arsenic, having all the desirable and deleterious qualities of Paris green, and the chief superiority claimed for it over that is, the much lower price at which it can be afforded.

Chilled Plows.—One of the greatest of recent improvements in plow making, is in the hardening of the metal by means of the chilling process, which has vastly increased the durability of this implement. Prominent among the makers of plows of this kind, is the "Syracuse Chilled Plow Co." It gives some idea of their business, when they say that they expect that 40,000 of their plows will be a-field this season. As to the excellence of their plows, they offer the highest testimonials.

Asbestos Liquid Paints.—These paints, made by the H. W. Johns' Mfg. Co., have in a remarkably short time attained a position that could not have been possible without real merit. When the Company received the contract to supply paint to cover the entire structure of the Metropolitan Elevated Railroad, the extent of the order was a matter of remark. Since then, the Company have made a contract for all the white paint to be used, inside and out, upon that immense pile, the United States Capitol at Washington, and, if we mistake not, the other Government buildings. The magnitude of this order should not be a source of so much satisfaction to the H. W. Johns' Mfg. Co. as the fact that it was made at all. Those who know the thorough investigation that is made by the engineers in charge of the public buildings appreciate that this is indeed a high endorsement of the paint. The Asbestos paint is used upon another structure, which, though not so extended as the Elevated Railroad, or so prominent as the United States Capitol, is to the writer of far more importance than either—his own barn. It takes precedence of either of those in the fact that it was painted first. When the paint was applied, it was a comparative novelty. We noted then the ease of application and its covering qualities. Now, at the end of two years, we find the surface remarkably hard and glossy, and it shows every indication of wearing in a most satisfactory manner. The fact that it is furnished in a great variety of pleasing tints, and in a condition ready to be applied at once, will lead those intending to paint to look into its merits.

A Handy Shingling Stage.—Among the many sketches and descriptions of ingenious devices for use on the farm that our subscribers are now sending us, is one from "F. L. P." Greenville, Ind., for a stage to be used in shingling roofs. The apparatus consists of an iron hook, made of strap iron, 1¼ by ⅜ inches and 3½ feet long, and shaped as indicated in fig. 1. The heel-board or seat is made of 2 by 4 scantling of any length to suit; triangular blocks are nailed to the scantling, three feet apart, to support the outer edge of a six-inch flooring plank, as shown in the engraving. Our correspondent has found these hooks "perfectly safe on the steepest roofs. Lying close to the roof they offer no obstruction to the snapping of chalk-lines. They furnish a comfortable seat to the workman, allowing him to walk back and forth with ease and safety. They can be readily moved up and down the roof as the work progresses, thus avoiding the driving of a single nail in the finished work." He is now using eight hooks which cost only $1.

Fig. 1.—THE IRON HOOK.

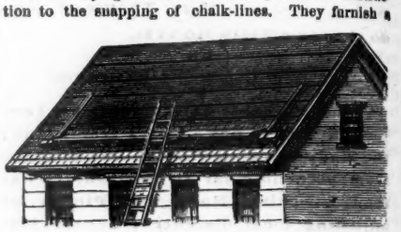


Fig. 2.—ROOF STAGE IN OPERATION.

The Montgomery Rockaway Grain Fan. The makers of this fan sent one of them to our farm, last year. In the press of other matters we have omitted to state that the Fan was found most satisfactory in use, the report indicating that it substantiates the claim of the makers—Messrs. Dorsey, Moore & Co., Baltimore, Md. It is not a new invention, but has been before the farming public for many years, being constantly improved, until now the makers think that they have a Fan that meets all requirements of the grain-grower, in separating foreign seeds. It is poor economy to buy a poor fan.

Life Insurance—Reduction in Rates.—With the general fall in prices, lower rates for life insurance have been looked for. To this it has been replied that the rates were originally made upon a 4 per cent interest basis; also, that it is better for Mutual Companies to maintain the old standard, and return any surplus accumulations. This last agreement would be a good one, but for the fact that those who most need life insurance have not the ready means to advance any more money than is absolutely required. It is also claimed that the business should be carried on now at less expense for salaries, etc. The experiment is to be tried, and it is well that it is to be done by one of the largest and strongest companies in the world, the Mutual Life Insurance Company of New York, which has assets amounting to over eighty-four millions of dollars, and a surplus of over four million dollars, or over eleven millions at the N. Y. Standard of 4½ per cent. This company now issues polices at a reduction of 15 per cent, as noted on page 151. Any one can obtain particulars, statements, rates, etc., by simply addressing the company for them.

Russian Fair.—The "Third Baltic Agricultural Exhibition, and International Live Stock and Machinery Competition," is to be held at Riga, Russia, June 27, to July 12th, next. The programme is a comprehensive one, and offers special attractions to American manufacturers, for the introduction of their goods into a country where agricultural implements are greatly in demand. For particulars, address O. W. Maddans, agent, Riga, Russia.

Agricultural Steam Engines.—Most of us can recollect when the employment of an elephant upon the farm seemed quite as probable as the use of a steam engine. It was not long ago that their use at all was discussed. Now the question is—"Which engine shall we use?"—and it need not be a very large farm to make

this question an important one. *Power* is needed for many purposes; shall we raise grain and feed it to horses and thus get power, or shall we sell grain and buy coal and feed that to an engine? The decision must depend upon individual needs and surroundings. One farm will need a stationary engine, while another must have a portable one, and the choice between the two must be carefully made. One of the oldest firms engaged in the manufacture of Agricultural Steam Engines, both Portable and Stationary, is Wood, Taber & Morse, of Eaton, N. Y., who offer a great variety. Not content with former achievements, they offer for the machines sent out this year, several improvements which will greatly add to their efficiency, including an Improved Governor. Full descriptions of their various engines are given in their catalogues, which may be had on application.

Plowing with 3 Horses Abreast.—"C. S.," Hart Co., Ky. In plowing with 3 horses abreast, one must walk on the plowed ground, unless some contrivance is used to throw the draft clevis on to the land side sufficiently to put the off horse in the furrow. This, however, has the disadvantage of throwing the draft out of line and causing considerable side draft.

Sod vs. Stubble for Corn.—A subscriber, in Fellow Co., Ind., planted 18 acres of corn last year; half on a clover sod, the other half on "the best side of the field, in corn the year previous;" all planted the same day and having the same treatment throughout. The result was 13 bush. per acre on the corn-stubble, and 50 bu. on the sod land. Although the stubble had some manure, it is very evident that the clover added vastly more fertility to the soil and was the cause of the larger crop. It is a common experience that a clover sod is one of the best of manures for any kind of grain crop, and it is highly valued by most wheat-growers in all sections.

Red Ants are often a great pest in a house, and it is difficult to get rid of them. A friend says that they may be readily trapped thus: Ants are fond of fresh lard, and if a plate be greased with that they will leave almost everything else and go for it; in their greediness they get caught in the lard and can not get away. The plate is to be occasionally warmed and wiped and then re-greased and set again. It is well to place some small sticks against the edge of the plate to serve the ants as bridges and ladders by which to reach the lard.

Watering Horses.—"I. S. M." Horses should drink after, rather than before eating, as a rule, though there are exceptions. A very thirsty horse may have a little water, though not all he desires, especially if heated.

Whole Grain for Horses.—A correspondent takes exception to a recent item in the "Basket" on "Crushed Grain for Horses," and says: "All the horses I have ever had do not relish oats so well as corn on the ear. Indeed, my blooded mare thrives finely the year round on unshelled corn. I give as a meal, 4 ears and a small handful of hay, on light work. At steady work, 6 ears and hay. Oats do not digest so well as corn. I feed old corn on the ear only."

Lawn Mowers—The Philadelphia.—There are several machines, each in its way so near perfection that choice between them is difficult. For example—if asked which of the leading sewing-machines was best, we could not answer. Each is best to the one who uses it. So with Lawn Mowers; several do almost perfect work, and we are puzzled when asked which is best. The makers of the "Philadelphia," Messrs. Graham, Emlen & Passmore, come forward in advance of all others, with the announcement of their machines for 1879—in which they inform us that they took the First Prize at Paris last year. We have seen no one accustomed to the "Philadelphia" who would exchange it for any other.

A Grade Jersey Cow.—We have often given it as our opinion that for all purposes *save breeding*, grade Jerseys were frequently more valuable than herd-book animals. Mr. Saml. J. Griswold, Guilford, Conn., supports this view by the following statements. He writes, March 1st ult.: "I own a grade Jersey cow, ¾ Jersey, ¼ Ayrshire, bred by Col. Thomas Fitch, of New London, Conn.; she dropped her calf Sept. 28, 1878; in the month of December she made 51½ lbs. of splendid butter, independent of the milk used in my family, which I estimate at more than 3 pints per day; her feed was dry hay and 5 quarts of provender, and 4 quarts of carrots or beets each day. Let any one excel this who can."

Seed Drill and Cultivator Combined.—The "Planet, Jr.," by S. L. Allen & Co., Phila., Pa., has long been before the public, and has proved itself a most excellent implement. It can be readily adjusted to sow seeds of different sizes, whether ordinary garden seeds, or those for farm root crops. After serving as a seed-sower, it is readily converted into a cultivator, wheel-hoe, or wheel-plow for keeping the plants free of weeds. Several forms of the implement are made—seed sower alone, wheel hoe and cultivator alone, and an implement in which these are combined, as explained in the catalogue to be obtained of the makers.

To Prevent a Cow Leaking Milk.—"J. B." To use an elastic band around a leaky teat, will be injurious. The compression will soon cause mischief. Any other mechanical contrivance will doubtless have the same effect. A safe practice is to procure some collodion at the druggists, and so soon as the milking is over, to cover the end of the teat with a film of it. This dries instantly, and shrinks in drying, thus closing the orifice so gently as not to be hurtful, and will break away in milking.

A Reliable Churn.—No doubt that the majority of the butter is made in large dairies, but the majority of butter makers have but from one to four or five cows. In the case of the writer, his cows are never less than one, nor more than three He manages to make butter summer and winter, and has for the past 7 or 8 years used no other churn than the "Blanchard." The cows, being high grade Jerseys, are milked up to within a few weeks of their time. In all these years there has been no case of "frothing" or any other difficulty in making butter, save on two or three occasions, and then it was found that the proper temperature for the cream had not been observed. With the cream at 60° to 63°, the butter comes as a matter of course, and we have but one fault to find with the churn, which is, that in summer the butter comes too soon. For working and washing the butter in the churn, and for ease of keeping clean, nothing more is to be desired.

A Good Farm.—A request comes from "F. H.," for one of the Editors to define "a good farm." If F. H. will state for what purpose the farm is wanted, and in what part of the world, and give his full name and address, we will endeavor to meet his wishes.

Many Catalogues of Seedsmen, Nurserymen, Florists, dealers in implements, animals, fertilizers, etc., etc., are received by the Editors. A brief reference to a large number of these, all we have space for, is given on page 156—our readers can hardly fail to find some one among them to supply almost any want. Fuller details of a few of them will be found in the advertising columns.

The American Pomological Society.—At the last meeting, at Baltimore, Nashville, Tenn., was fixed upon as the place of meeting for this year. The Southern members themselves proposed to change the place to some more northern locality. Just as we go to press we learn, and can only make the bare announcement that, at the invitation of the New York Horticultural Society, the American Pomological Society will hold its 17th Biennial Session in New York City. We expect to give the precise date and other particulars in our next issue.

Lost Cud.—"P. F. B." Elizabeth, N. J. Suspended rumination commonly called lost cud, is the effect of indigestion. This is frequently removed by giving the cow one pint of raw linseed oil, or melted lard. A very popular remedy is to cause the cow to swallow a salt mackerel; this is often effective, and operates doubtless by the action of the salt and the oil in the mackerel.

How to Make Boats.—"H. W. W.," Enon, Pa. Instructions for building boats were given in the *American Agriculturist* for October, 1872.

"Grub in the Head."—"R. F. A., Macon Co., Ala. The bot-fly which lays its eggs on the sheeps' noses, may be driven off by covering the noses with tar. If the time to do this cannot be spared otherwise, make a long trough of a V shape, and scatter a very little salt at the bottom, then take a brush and smear tar on both sides of the trough inside, so that when the sheep lick the salt, they will rub their noses on the tar. To blow puffs of smoke into the nostrils, until the sheep are giddy and fall down, often causes the removal of the worms.

Roots for Cows.—"S. H.," Waukesha Co., Wis. Sugar-beets (Lane's Imperial) are better for milk cows than mangels; they have more sugar and less water in them. A variety of mangel, called the Yellow Globe Kinver, is excellent for cows.

Stock for a Cheese Factory.—"L. S. T." To run a moderate sized cheese factory the milk of 600 cows, at least, would be required. The building and furniture could be procured for about $3,000.

Plowing in Green Crops.—"P. W.," Talbot Co., Md. When the land is too poor to grow a crop of rye or oats, it is too poor to grow anything of value for turning under. Green manuring is a good method of keeping land in good condition, but is useless for improving poor land, because poor land cannot produce a crop to turn under. Something may be done by sowing buckwheat as early as is safe, and turning the crop under when in blossom; then sowing again to buckwheat, and turning that under; rye may be sown on the last plowing and harrowed in. A dressing of 20 or 30 bushels of lime per acre would be useful spread on the last plowing and harrowed in with the rye. It is probable the soil will then produce a crop of clover.

Turnips for Milk.—"O. S. C.," Belvidere, Ill. Turnips are useful as food for sheep and beef cattle; but they are far surpassed in this respect by mangels, "blood" beets, and sugar-beets. 30 to 40 tons of the latter can be produced per acre with the same culture that will produce 20 tons of turnips, and red or blood-beets come as early into use as turnips. The great objection to turnips is that they *will* flavor the milk and butter in spite of nearly all precautions.

Pearl Millet.—"S. H.," Milwaukee, Wis. Last season we saw a bunch of Pearl Millet, one plant only which would furnish as much fodder as 12 hills of corn of moderate size, such as is grown for fodder. If it would have grown so well in close rows is doubtful, and it is hardly safe as yet to say if it will be better than corn. That is to be tested. It is enough to say at present that the plant is worth trying in a small way. It will grow where sorghum will, and to get the best results must have rich soil.

Tanning Sheeps Pelts for Rugs.—"A. D.," Republic Co., Kansas. Sheeps pelts can be tawed and not tanned. Tawing is done by scraping the flesh side of the pelt clean from all flesh or fat, then sprinkling it with a mixture of finely powdered alum and salt in equal parts. Two skins are then laid with the flesh sides together, or a single one doubled lengthwise, and rolled up for a week or 10 days, then opened, scraped, and washed, and rubbed dry with a piece of chalk, and worked and pulled until the skin is soft.

Turnips for a Horse.—"Old Subscriber," New York. Turnips are healthful for horses. They should be cut into thin slices, or what is better, pulped finely and mixed with a little meal and some salt. Ruta-bagas are better than white turnips. One quart of oil-cake meal daily will be useful, especially in the spring when the coat is shedding. This may be given with some corn-meal or other ground feed.

Strength of Concrete.—"F. C.," St. Cloud, Mich. Well made concrete is much stronger than stone and lime mortar; it increases in strength daily for more than a year. After that time good concrete will resist a greater pressure than common sandstone.

Burning Charcoal in Kilns.—"W. A.," Westport, Ohio. Charcoal is burned in kilns, by piling the wood as closely as possible until the kiln is full. Fire ways are made from air holes left in the brick work in the bottom, and the pit is kindled; when it is on fire sufficiently, these holes are stopped as may be required; if this is done without caution, and by inexperienced pit burners, the gases given out sometimes explode and burst the kilns. A kiln burns down sooner than a pit: 10 days are sufficient, and a 25 cord 1000 bushel kiln, may be filled, burned, and emptied twice in a month. There are more brands made in a kiln, than in a pit, but these are useful in starting the fire in a newly filled kiln. No one should try to burn a kiln, until he has learned the business of coaling in pits. It is well to build a small bee-hive shaped kiln first and try that; this kind is the safest.

Wound in the Fork of the Hind Legs.—"X. Y. Z.," Maries Co., Mo. A wound between the legs where the skin of both thighs comes in contact, is difficult to heal. The best course is to dress the wound with a simple cerate upon a pad of soft cotton, held in place by a bandage, passing between the legs and fastened to a strap or surcingle around the body. A little powdered "blue stone" (sulphate of copper) may be sprinkled upon the cerate.—Simple cerate is white wax, melted with twice its weight of sweet lard, with gentle heat, and then stirred until cool.

Wheat and Chess.—"B. M." If the owner of the specimen that is "part wheat and part chess," will send it to us, we will cheerfully examine it, but we shall not pay the sum named or any other for the privilege.

Sheep Pulling Wool.—"G. H. M.," Colorado Springs, Col. Sheep pull each others wool when they are suffering from indigestion and a depraved appetite. When this is noticed, it would be well to give a strong dose of salt which will act as a purgative, or one ounce of an equal mixture of salt and Epsom salts may be given to each sheep separately, lest some get too much.

Safety Horse Shoes.

Some of the German agricultural papers describe a method of applying calks to horses' shoes to prevent them from slipping. The shoe is pierced as shown at fig. 1, and the holes are threaded to fit the screws, fig. 2. The latter consist of sharp chisel pointed pieces of hard steel and buttons. The sharp points are screwed into the shoes when the horses are at work, and when they are brought into the stable, the points are taken out, and the buttons are put into their places. The screws are square-headed so that they may be moved by a wrench.

Fig. 1.

Fig. 2.

Fig. 3.

At fig. 3 is shown the shoe as it is fitted to the foot. Any ordinary shoe may be thus fitted; there is no necessity for its removal to change the calks, and in the stable there is no danger of injury from the points, because they are replaced by the buttons.

Temporary Fence-Posts.

Portable fences are becoming common. A convenient post for a temporary fence is shown at fig. 4. It is made of flat bar-iron, pointed at the bottom. The bends are intended to receive wood fence-strips, which are fastened in place by short pieces of bar-iron bolted to the post. The bottom piece is lengthened into a brace, which, being driven into

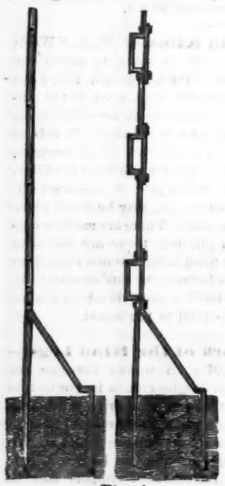


Fig. 4.

Fig. 5.

the ground, holds the fence firmly. A similar post, fig. 5, will serve for a wire fence, the wires being carried by the staples and held firmly when these are screwed up close by the nuts behind the post.

Use of Bark for Buildings.

The bark that is so often wasted is valuable for many uses. It may take the place of lumber for siding and covering pens and sheds, and the effect is picturesque and pleasing. It is durable, and will not split so much as some boards. Bark is peeled from the timber in the spring: oak bark is loose about May; hemlock and other evergreens, and tamarack can be peeled until June or July. When the tree is down the bark is peeled by first cutting it through around the logs in lengths of 4 to 6 feet,

Fig. 6.

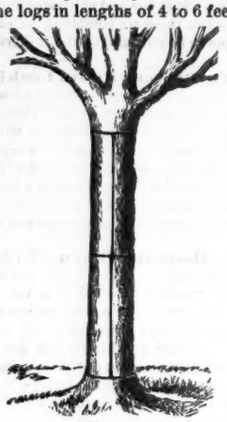


Fig. 7.

as shown at fig. 6. When it is desired to deaden and season the timber before it is cut down, as is done in the South, the bark may be ringed and split as shown at fig. 7. To loosen the bark, an iron, or iron-shod wooden spud or chisel is used, with a thin broad edge like that in fig. 8. This is inserted under the edge of the bark, which is forced

Fig. 8.

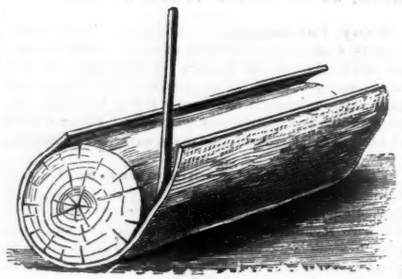


Fig. 9.

from the timber in a sheet. These sheets (fig. 9), while green are flattened out and piled to dry, with sticks between them in the manner shown at fig. 10. Stones or heavy pieces of wood are laid

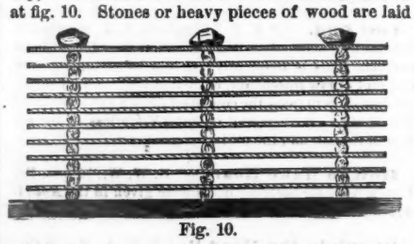


Fig. 10.

on the top to prevent the bark from curling up as it dries. The inner surface of the bark is laid downwards, for otherwise the rain would mildew and stain it, and rot it in warm summer weather.

Read—Read Carefully,

Thoroughly, and thoughtfully, the Talk on Fertilizers on page 127, and the one on Farm Experiments following. The subject of Fertilizers is one of the most important now before American cultivators, yet it is comparatively little understood. We have tried to set forth the principles in the plainest language, divested of all scientific terms, except three or four names of things which have no other names. It will be interesting to every reader, whether a farmer or not, to understand these principles. For example, all have bones, the solid part of which is mainly made up of lime and that highly inflammable substance, phosphorous. This bone material must come from our food; the food must get it from the soil; soils generally contain little phosphorus, and here comes in the fertilizing process. We are anxious to have cultivators read and understand the subject; to get into the way of farming more profitably by using the *right* fertilizers, and save some of the millions of dollars wasted in the purchase and use of these articles at haphazard. We are confident that if we can persuade farmers generally to take hold of Farm Experiment No. 2 (page 129), or better still, No. 3, it will be of very great advantage to themselves, and others, in the future. A simple experiment (No. 1) is provided for those who can not, or dare not, or will not undertake the more important and more complete No. 3, or No. 2. It is certainly far better to try No. 1 than to make no advance in this direction.

A Handy Clothes-Rack.

Some contrivance, upon which small articles of clothing, etc., may be hung to dry or to air, is often a great convenience. Such affairs are sold at the furnishing stores, and many have exercised their ingenuity in producing home-made racks, several of which have been given in former volumes. A rack

Fig. 16.

Fig. 14.

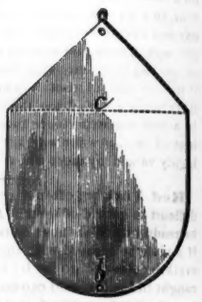


Fig. 11.

of this kind should be so made that its arms may be readily extended, and when not in use, take up but little room. "G. D. J.," Sterling, Ill., sends sketches of a rack he has contrived; he gives no measure-

Fig. 12.

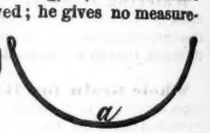


Fig. 13.

ment of parts save the rods, which are three feet long. Figure 11 is the back-piece, which is to be fastened to the wall, and to which the other parts are attached; fig. 12 is a semi-circular block, with five holes bored in the edge; this is firmly secured to fig. 11; fig. 13 is a curved rod of iron, fastened at *e* to the back, in front of the block 12; the drying-rods, fig. 14, three feet long, have each a staple of brass wire, through which the iron rod, fig. 13, passes. The rack, when completed, is shown in fig. 15; the drying-rods, when not in use, hang by their staples to the iron rod; to extend them, they have only to

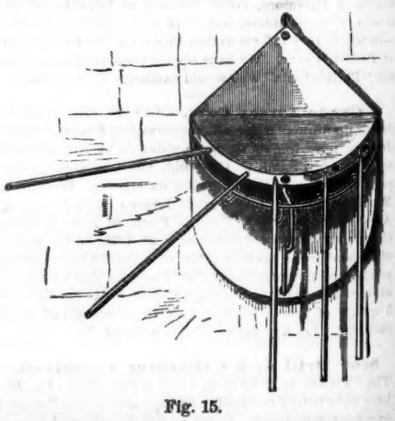


Fig. 15.

be brought to a horizontal position, and the end of each thrust into a hole in the block. The brace, fig. 16, is used to strengthen the affair as seen in fig. 15.

The Guernsey Breed of Cattle.

The cattle of the little island of Guernsey bear its name, but if a visitor to the island asks about the cattle there he will probably be told that they are of the Alderney breed, or that they are identically of the same breed as those of the adjacent island of Alderney. It is indeed true that the cattle of these two islands are very closely allied, the islands themselves are in the same judicial district, the same laws govern the importation of neat stock, and occasional transfers of stock take place. This, however, does not make Guernseys, Alderneys. There is really no such breed as the Alderney, but that name, as has been often before explained, was given in England, and more or less in this country, indiscriminately, to any of the cattle of the Channel Islands—that is, to both Jerseys and Guernseys. Stringent regulations prevent the introduction of breeding cattle from anywhere else, even those of the sister island of Jersey are subject to the embargo, and are not regarded as of the same race; though in Jersey the cross with the Guernsey has been taken and valued, and the regulations which enforce the immediate slaughter of any cattle capable of breeding which are brought to the island from anywhere else, do not apply to those of the other islands of the Channel Island group. Thus it would appear that in the opinion of the islanders themselves the Guernseys are the choice breed of the Channel, improving the Jerseys but not themselves benefited by the Jersey or any other cross.

They differ greatly from the Jerseys in many respects. They have little or none of that peculiar deer-like style and expression which characterize the Jerseys. They are coarser in bone, heavier in carcass, larger every way, and naturally less precocious. They are allowed to first calve at about two and a half years old, which gives them more size and probably also a tendency to carry flesh. Their breeders are not unmindful of the facts that the size of the calves, and the aptitude of the cattle to make beef and turn off well when their usefulness in the dairy is from any cause at an end, are matters of no small importance to the so-called "common farmers"—that is, to all who are obliged to study closely the economies of farming. The Guernseys are preëminently the farmer's cow for cream and butter production, and for coloring the butter of other cows. So strong are the race characteristics (prepotency) that grades, even only half-breds, possess the best qualities of full bloods to a remarkable degree. It might be inferred that the Guernseys are not a good looking breed; the contrary is true of many specimens. There are indeed among them not a few whose sloping rumps, big heads and heavy limbs are not ornamental, but as these are likely to be the very best milkers and butter cows of the herd, their defects are easily overlooked, or even magnified into virtues or points of beauty. For instance, the long head and broad square muzzle are regarded as characteristics of value if not of beauty, and one can hardly visit a Guernsey herd, either in this country or on the island, without having this feature pointed out and dilated upon. The colors which predominate in Guernsey cattle are yellow, redish-yellow, fawn, brown shading to nearly black, light-fawn, and yellowish-fawn, dun of various shades, never, however, inclining to gray, as is usual among Jerseys. These colors are more or less mingled with white, which is most frequently met with upon the belly and flanks, the legs, switch, and face. A star, or rather a triangular spot in the forehead, with a white switch, are regarded as characteristic, even though scarcely any other white is obvious. Solid colored cattle occur, but the fashion has never set decidedly in that direction, and as useful points have so greatly the preponderance in the estimation of Guernsey breeders, it is earnestly to be hoped that they will not lend themselves to the folly of placing a fictitious value upon any color points. It is enough if the colors of a fine animal are agreeable and indicative of purity of blood Brindle not unfrequently occurs either as obscure lines upon the head and neck (black upon fawn or reddish-fawn), or more extensively covering the body. It is not an admired color, but is certainly no indication of impurity. The skin of the Guernseys is soft, pliable, and unctuous, abundantly supplied with "yolk," which is almost universally of a rich orange-peel color. This is, of course, most conspicuous within the ears, and when the hair is parted upon white spots, especially on the head and shoulders. The udder, scrotum, and the nearly hairless parts, like the spots between the forelegs and brisket, and around the eyes, have a similar rich yellow *glow*, while the muzzle, which is characteristically black in the Jerseys, is white or buff in the Guernseys, and usually encircled by a fillet of light short hair, though this marking is much less conspicuous than in the before named breed.

The Guernseys are certainly deeper average milkers than the Jerseys. It can not be said, perhaps, that they give richer milk, but it is much higher colored, and will impart its beautiful tint to the butter of a number of common cows, being in this respect decidedly superior to the Jerseys. As to the quality of the butter, aside from color, there is nothing to choose between them; and as to which breed will give the most milk, or make the most butter upon a given quantity of feed, that has never been determined. Cow for cow, the Guernseys have the advantage in size, and would probably on that account not produce so much in proportion to their live weight. As a breed, the cows have excellent udders, and teats which fill a man's hand. Many are well marked, according to the Guenon theory. They hold out well in their milk, are quiet, docile, and tractable both on the tether and in the pasture; in short, for general usefulness, as butter yielders, they are nearly perfect.

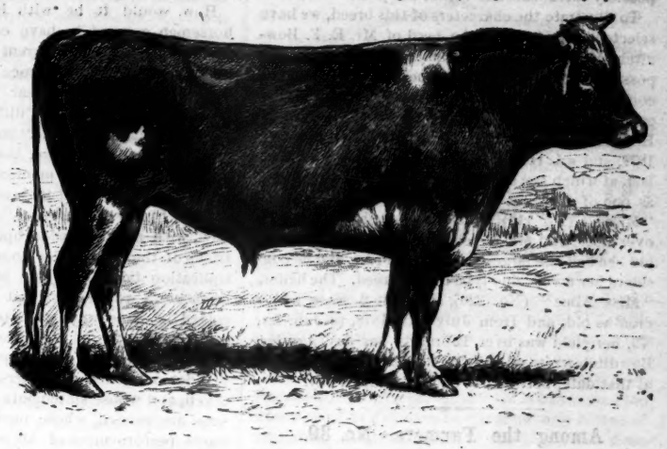


Fig. 1.—GUERNSEY BULL "HUBERT."—*Owned by E. F. Bowditch, Esq.*

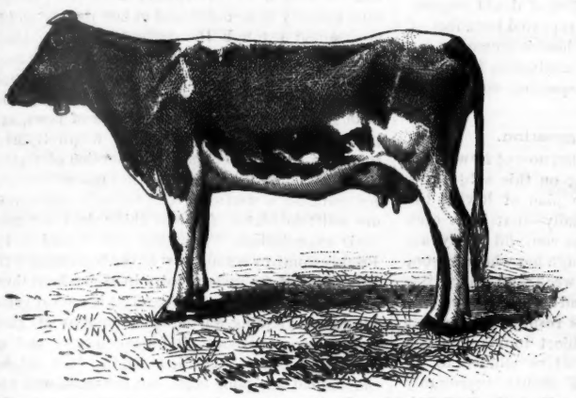


Fig. 2.—GUERNSEY HEIFER "MISS ALICE."—*Owned by E. F. Bowditch, Esq.*

The history of the breed in this country is briefly told. Guernseys were imported both into Massachusetts and Pennsylvania nearly 40 years ago, and not long after into New York. Wherever they were bred they made both their mark and fast friends; but the distinction between them and the Jerseys, which were then universally called Alderneys—a name which has been rather indiscriminately used as applied to any cattle from the Channel Islands—was not generally recognized, and the blood was in many cases mingled and lost. A few herds have been kept pure with jealous care, and these, with recent importations, form the basis of the registered or herd-book stock now for the first time making a figure among the pure breeds of this country. The Guernsey is a favorite breed in England, and has there been bred either pure or crossed with the Shorthorns for milk and butter purposes; and noble cows indeed are those cross-bred Guernsey Shorthorns—very large, perfect handlers, rich and deep milkers—genuine ideal dairy cows. In this country, as already intimated, they are a good deal crossed with the Jerseys. There is at least one entire herd of some 40 or 50 milch cows, all of which contain a mixture of the blood of these two breeds; a Guernsey bull having been kept some years at the head of the herd, and then changed for a Jersey. The result is a herd of cows of great uniformity, combining the style and great beauty of the Jerseys with the heavier carcass, better beef points, and richness of color of the Guernseys, while the excellencies of both breeds combine in the cross to form a milch animal of unusual value.

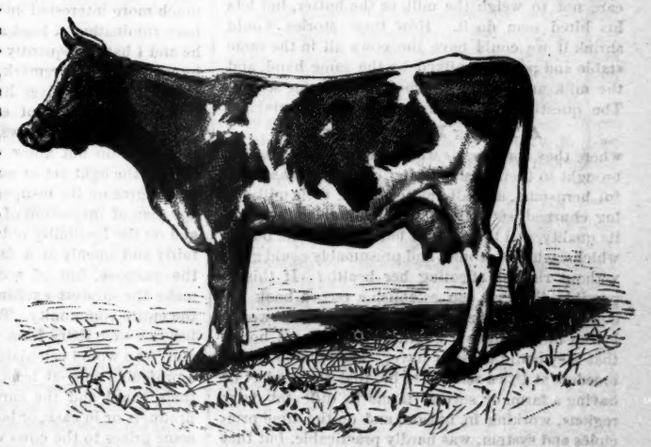


Fig. 3.—GUERNSEY COW "MARIE."—*Owned by E. F. Bowditch, Esq.*

The breeders of Guernseys in this country formed themselves into a "Club" two years ago, for the purpose of establishing a public registration of

their stock and publishing a herd-book. One volume of this official record has been issued, and its popularity has been such as to require two and possibly three editions within the year.

To illustrate the characters of this breed, we have selected animals from the herd of Mr. E. F. Bowditch, Millwood Farm, Framingham, Mass., who possesses some of the best stock of its kind in the country, and give engravings from accurate photographs. The bull "Hubert," (No. 47, Guernsey H'd B'k), was imported by Mr. Bowditch in April, 1877, and was three years old on the 30th of Dec. last, at which age he weighed 1,400, and is regarded as one of the best animals of his age. The cow "Marie" (No. 116) is also imported; she weighs over 1,000, and Mr. B. remarks that as a two-year-old she had the largest bag he ever saw, and he considers her a very fine type of the breed. The heifer, "Miss Alice" (No. 220), is about 2 years and 9 months old, and from July 11th, 1878, to Jan. 1st, '79, her yield was over 12 quarts per day, and Mr. Bowditch wrote on Feb. 22, that she was still giving at that date, between 11 and 12 quarts a day.

Among the Farmers.—No. 39.

BY ONE OF THEM.

It was about the second week in January that I found myself among the farmers, who are also dairymen, at Utica, attending their meetings, and being edified both by intercourse with them and by the addresses made. There was a discussion, by a knot of Jersey and Ayrshire breeders in one of the hotel parlors, on establishing a true and attested

Milk and Butter Record for Cows.

There has certainly been more good thinking done on this subject than most are aware of. I have known plans suggested and talked over with great earnestness during these many years, and now it seems as if we were ready for a successful movement.

If bragging ended there—in braggadocio; if lying only affected the liar; if a few imaginative breeders sat down together, or sat down to write to the papers, just to see who would out-yarn the others with assertions about the amount of milk and butter his best cow would yield, the case would be different. But every time a big yarn is told, there are those who believe it, and though founded upon facts, it grows bigger, or is apt to do so. Twelve pounds of butter a week becomes fourteen, the quart or two of skimmed milk given away becomes two quarts of new milk sold and cream taken for coffee daily, and the 14 pounds of butter is claimed, notwithstanding. A good cow that—but let the crowd alone awhile and she will be nowhere. Somebody else's cow makes 18 lbs. a week, "on grass only," of course; perhaps he is of the conscientious ones who "can't tell a lie," and so he takes care not to weigh the milk or the butter, but lets his hired man do it. How these stories would shrink if we could have the cows all in the same stable and pasture, milked by the same hand, and the milk and butter weighed on the same scales! The question is: Is it practicable to establish

A Testing Farm for Cows,

where they could be as well cared for *as is possible*, brought to their best milking condition by a skillful herdsman, and all treated alike, their milk being churned, separately, often enough to establish its quality, and the amount both of milk and butter which each cow would, and presumably could give, without risk of affecting her health? If this is possible, then we can establish a record book for cows, which for the milk and butter breeds would be the most valuable auxiliary to the herd books that they could possibly have. The opinion of the breeders at Utica seemed to be, that the project of having a farm, or several farms in different dairy regions, working in unison, and on the same principles and system, was hardly practicable, but that it would be much better to employ trained experts who should go to the farms where famous cows or those to be tested are kept, and there make their observations: see the feeding, milking, setting, churning, etc., for a week at a time, at stated or occasional periods, and so get a record for the cows, which would be accepted as authoritative. They unanimously shrunk from sending their best cows to a farm 50 or 100 miles away from home, subject to accidents of transit, to be kept there for a year, or less, or even to be more tested for a month.

How would it be with horses! Would our horsemen consent to have contests of speed settled by *experts* at the different breeding farms, one horse at a time, in presence only of the breeder and his men?—How near to the truth would we arrive?—Would it be different with cows?—I know breeders who will "pull the wool over the eyes" of persons visiting their farms, in the most artless and child-like manner—fill their ears with wonderful stories, and their souls with admiration. In fact, I have "been there" myself, and yet even now, with my eyes wide open, and knowing the tricks of the cow-jockies about as well as the multiplication table, the rule of three, or the *pons asinorum*, I would not trust myself not to be deceived in some way by master or man, milk-maid or butter-maker, if the effort were really made.

Now it must be understood that *one* dishonest breeder or feeder, or butter-maker, whose word is taken, and whose statements on weights and measures are trusted, whose memorandums of the famous performances of his cows are accepted and published as true by the newspapers, establishes the fact that the assertions of interested parties are not to be taken as evidence of any thing, except of the frailty of human nature. I have no doubt that there are hundreds of breeders who would conscientiously understate the yield of their cows, the amount of butter made, and other similar facts, if there could be a shadow of doubt respecting them, and have met with repeated instances of exactly this thing in cases where it seemed to me unreasonable not to take probabilities as facts, so I wish to have my remark respecting cow-jockies applied to them alone.

Mr. Hardin's Suggestion.

Mr. L. S. Hardin, of Kentucky, now of New York, has done some good thinking on this subject. I believe he rather favors the plan of having the owner weigh a cow's milk daily—that is, at each milking, keep it by itself, if he can, and at any rate as often as once a month through her whole season, set her milk by itself for a week and churn it—weighing the actual butter, and estimating the product of the month from this result. During this whole period he is to be subject to unannounced visits from the "expert" before alluded to, or from different experts, who should thoroughly watch the proceedings and results, and whose findings should constitute a record for the cow. I have already suggested obvious objections, which I really think would prove fatal to this plan.

Mr. Kellogg's Proposed Plan.

Mr. P. C. Kellogg, of New York, although he is much more interested in horses than in cows, has been ruminating at least a year on this subject, and he and I have frequently compared notes. It was he who made the remark which I once quoted, to the effect that he gives little credence to stories of great performances of either cows or horses (in private) unless he knows "who held the watch on them." I do not know whether he has given his plan to the light yet or not, but understand that we quite agree on the insuperable difficulties attending any plan of inspection of cows on the home farms, and on the feasibility not only of making the tests fairly and openly at a farm and dairy devoted to the purpose, but of securing entries enough to make the contest exciting and of great interest to the entire community. The plan would be to establish one such dairy farm controlled by a society or club who would calculate to make their investment a profitable one—at least to make the cows pay for their board and the care given to them, by their products or in cash, or both, and to offer very handsome prizes to the cows winning the highest honors in several important classes. For instance, we will say $250 for the greatest amount of butter; $100 for the greatest amount of milk; $200 for the greatest amount of cheese, as caseine—$100 for the greatest amount of butter, as compared with the live weight of the cow; the same for butter, compared with food consumed; and so tests might be multiplied and might each constitute a valuable record. It is Mr. K.'s belief that the successful establishment of one such test dairy, say in the vicinity of New York City, would be soon followed by that of others in dairy regions throughout the country, and in this I fully coincide—every thing, of course, depending on the success of the first attempt. These test dairies would need to recognize some common head or organization, and by this central club the records should be kept and published.

In preparing a catalogue of the herd of that discriminating breeder and most estimable gentleman, the late Moses Y. Tilden, some years ago, I alluded to certain non-registered cows, as excluded from the record of the A. J. C. C., but having their

"Pedigrees Written in Butter,"

a realization of this idea seems to be within the possibilities of the next few years. Something of this kind is the only way by which we can surely and rapidly establish families famous for uniform and great production of butter. Is it not worthy the combined effort of those at least who will be benefited by it—the breeders of the milk and butter races of neat cattle? If we can thus bring towards perfection the races of neat cattle as to milk and butter yield, as the beef breeds have been improved, and as running and trotting horses have been developed, is it not worth the effort?

Prickly Comfrey—Its Propagation.

Like all other new plants, Prickly Comfrey has had its season of probation; first over-praised, then unfairly denounced, and at last its true merits ascertained through the patient trials of those whose verdict finally fixes its status. Having been prominent in bringing Prickly Comfrey to notice, we are glad that the final result is so favorable. Though it was presented as a matter of news, as a plant that seemed to us "well worth trying," there are some who regard the mention of a plant as a commendation, and while they do not thank us for bringing a useful novelty to their notice, they are swift to blame if a new thing does not meet their expectations. The case with regard to the Prickly Comfrey stands now at the beginning of the third year of its general introduction, about thus:

For those who have rich land, it is a most valuable plant, yielding an immense amount of green fodder, especially suitable for milch-cows, and excellent for other domestic animals. It it not recommended for poor soils, but for those who wish to get the greatest yield through liberal manuring; as one correspondent states it, "it will use all the manure you give it." Milch-cows, horses, pigs, and poultry, all thrive upon it. It often happens that cows will not eat it at first, and must be accustomed to it as shown in former articles. At first, the leaves must be chopped, or cut with a fodder-cutter, mixed with cut hay or other fodder, and sprinkled with meal or bran and a little salt. The cows are fed on this after fasting over night. The next day, the proportion of Comfrey is increased, and so on. It requires but a few days to teach them to prefer unmixed Comfrey. This matter is given more in full in November last, p. 416. This—the reluctance of cows to eat it at first—is the only objection worth considering yet made to the plant, and this is readily overcome. In several of the dairy centers in Massachusetts, the farmers, after a trial, are largely increasing their plantations, and we hear good accounts from other quarters. But the most positive proof that the Comfrey has now an established value, is in the fact that the dealers have made arrangements for large supplies. One seed house of our acquaintance, that at first offered it with caution, has contracted for an immense quantity; and another, which would hardly touch it at first, has arranged for half a ton of the roots.

How to Make a Start.

Heretofore, started root-cuttings only have been offered, but we understand that this year the roots will be offered by the pound, and the purchaser will make his own cuttings. The plant is one that propagates with the greatest ease; of the smaller roots, every bit from half an inch to an inch long, will, if properly treated, make a plant, while pieces

of the larger roots, of a cubic inch or so, will each do the same. The roots being cut up, the pieces are to be planted in boxes of very sandy earth, or of ordinary loam with an equal bulk of sand. There is little danger of having the soil too sandy. The boxes need not be over three inches deep, and of any convenient size. The cuttings are to be set in these boxes about an inch apart each way, just covered with the soil. No light is needed until the leaves appear, and the boxes may be set one upon another in a warm place in the kitchen or any other room. If one has hot-beds or a propagating house, he will of course make use of these, but our directions are for those who have neither. The temperature should be from 60° to 70°; the boxes should be looked at daily, giving water sufficient to keep the soil *moist*, but not wet or muddy. When the buds appear above the soil, then these boxes must be placed at the kitchen windows or some other light, warm place. The buds may appear on the surface of the root, or between the bark and body of the root as in fig. 1, or they may push from the central portion. Figure 2 shows a cutting made from a piece of a large root, near the crown. The cuttings started any time this month will make plants ready to go out when the ground is sufficiently warm; they are then to be set three feet apart each way. The soil should be well manured, and the plants kept clear of weeds while young. Though the propagation from root cuttings is so simple, there will doubtless be some who are unused to such operations and who may not care to undertake it, or can not give the time to details; such should

Fig. 1.—ROOT CUTTING.

Fig. 2.—PIECE OF LARGE ROOT.

Purchase Rooted Cuttings,

or young plants, which are offered by some dealers. These plants may be set out and allowed to grow until they form good sized crowns; then take them up, *cut off the leaves*, and divide the clump into several pieces, as many as can be made, having a bud or crown and a root to each. This division may be done at any time when the ground is not frozen. If the plants are large enough to divide by midsummer, it may be done and the growth from the divisions made then, will be large enough to allow of still another division in September.

Raising Calves with Skimmed Milk.

A neighbor who keeps a Jersey herd raises all his calves on skimmed milk, and saves a much larger proportion of them than when he allowed the calves to run with the cows. His heifers are quite as thrifty and he thinks reach maturity as early. He continues the use of the milk for several weeks, mingling meal and shorts, until they are old enough to get their living on grass, when they are turned out for the summer. This has not been our practice with Jerseys, as we wished to raise the best specimens of the race for their butter qualities. But even upon the mother's milk we have not infrequently lost the calves. We notice in the last report of our Commissioner of Agriculture an experiment designed to test the comparative gain of calves upon skimmed milk during the early and later part of the season. The milk was fed to ten calves, and the feed and the calves were weighed regularly. During the first week it took 11.02 pounds of the skimmed milk to make one pound of flesh. There was a gradual increase of cost of producing flesh until the ninth week, when each pound of flesh required 17.01 pounds of milk. At this age they began to eat grass, and less milk was required. After the cream is taken from the milk, most of the caseine remains, which is a good producer of muscle, and furnishes every thing but fat that the animal needs. Indian meal contains this, and other nourishment, and is a profitable ration to add to the skimmed milk. The custom of raising calves on skimmed milk and meal, or shorts, is on the increase in the dairy districts, and is found to be safe and profitable. Those who follow the practice are well satisfied with the results. CONNECTICUT.

A Lever Gate Latch.

The ingenuity shown by a well educated cow in opening ordinary gate fastenings, calls for greater ingenuity in devising latches, and these are usually effective, until the animals learn their construction and make a new invention necessary. Mr. Wm. E. Bower, Clarke Co., Ind., sends us a drawing of a gate lever on which there is no patent. In fig. 1, the device is shown in place upon the gate; the latch, *E*, is raised by the lever, *L*, which works upon the pivot, *B*. It will be seen by taking hold at *L*, and that moving the lever, either to the right or left, the latch, *E*, will be raised; when let go, the weight of the lower end of the lever and the latch will bring the latch into place. Figure 2 shows the lower end of the lever, *L*; it has a mortice in which the latch slides; at the lower part of this is the

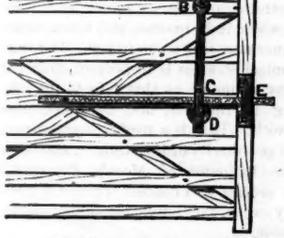


Fig. 1. LEVER GATE LATCH.

Fig. 2.

roller, *D*, upon which the latch rests; at *C* is a pin, placed half an inch above the upper edge of the latch. When the lever hangs at rest, the latch, *E*, can only be raised half an inch, which is not sufficient to clear it from the catch in the gate, but by moving the lever the end of the latch is raised sufficiently to free it. This appears to be easily made and practical, and is sufficiently unlike other latches to puzzle the most expert gate-opening cow.

A Shed for Feeding or Milking.

A cheap and convenient open shed for feeding or milking, may be built as follows. Posts are set in the ground in four rows 10 feet apart; the posts in the outer rows being 10 feet apart, and 7 feet above the ground, and those in the inner rows, being 5 feet apart, and 10 feet high. Fig. 1 shows the manner in which they are placed. These posts are morticed and pinned at the top to plates upon which rafters are laid, and where necessary girts are spiked to the posts. A feed trough is fastened to each inner row of posts, and a hay rack is fixed above each trough; the passage between the rows of posts, is used for the purpose of drawing fodder in a cart or wagon. The spaces between the inner posts, form roomy stalls for the cattle if desired, and if cows are kept, the posts may be placed 7 feet apart, and double stalls holding two cows each may be made. A tight roof is made overhead, and the gables and part of the sides and ends may be closed in; or the whole may be closed in and turned into a roomy comfortable stable. At fig. 2 is shown the end view of a section of the building, with the feed-troughs and hay-racks. By a little change, this

Fig. 2.—END-SECTION OF SHED.

kind of shed may be made to serve as a covered yard for cattle, and a receptacle for saving manure.

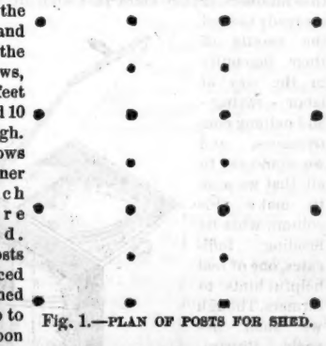


Fig. 1.—PLAN OF POSTS FOR SHED.

Cheap Farms Near New York.

"Can I get a small cheap farm near New York? I don't want to 'go West' at my time of life, with a family of daughters yet in school, but I have not the means to pay for a dear farm." Such is the burden of many inquiries—especially since the depression in manufacturing and trade has turned the attention of multitudes to farming as a means of livelihood. Many hundreds of thousands have gone to the newer regions, but, for many, age, family, dependent relatives, or other causes, make a distant migration undesirable if not impossible.

Cheap and dear are relative terms. One machine may be dear at $50, while another, resembling it externally, may be cheap at $100. Land is the cultivator's machine for producing crops. An acre of land costing $300, if near a ready and good market, with the collateral advantages of abundance of low-priced labor and fertilizers, etc., may be cheaper than an acre at $3, located where there is no demand for its products, no easy means of reaching a market, and no schools, churches, or good society. Taking all things into account, farms generally throughout the country are held at about their *worth*. The young and vigorous may well strike out into the newer regions and take advantage of the unexhausted native fertility of the soil, grow up with the country, and wait the coming of railroads, neighbors, schools, society, and markets.

For others, there are lands at the East which are cheap, whatever their price. And there are also plenty of low-priced lands within 20 to 50 miles of New York, Philadelphia, and Boston—lands obtainable at $10 to $50 per acre because they have been subject to a slip-shod treatment that has kept the cultivators poor, and scared away everybody else. Secretary Gold, of the Conn. State Board of Agriculture, in recent addresses, has given some good advice about the idle lands in that State, growing brambles, brush and weeds, where they ought to be producing profitable crops. If the authorities in the older Eastern States would take the same measures to enlighten the public about the agricultural capabilities of these States, as are taken by some of the enterprising Western and Southern States, it would be of great service both to the people and to the Commonwealths.

To go back to the text question above. There are at the gates of this Metropolitan City, in New Jersey, in Eastern New York, in Western Connecticut, and on Long Island, plenty of available cheap farms and low-priced lands that can be made profitable by those who will inform themselves thoroughly as to the best methods of treating them, and of applying the recent results of agricultural science. Take Long Island for example. Here is a stretch of a hundred miles lying on the shore of the Atlantic, whose waters furnish fish and sea weeds for fertilizers. The air is tempered by the winds coming up from the Gulf Stream. Nearly the whole Island might well be, and is to be, a great market garden for the millions living in New York and its near suburbs. For miles out it is already so, wherever speculation has not cut up the land into "city lots." A net-work of railways brings every part of the Island within one to three or four hours of the city markets. The wise and enlightened present management of these railroads, affords every facility to the cultivators, as, during the active seasons, freight trains stop even along-side of farms distant from stations, to take up farm produce, and

deliver it right into the city markets when desired. When, in ancient times, New England occupied a higher level, a vast mass of surface soil was, by glacier action, slid out, so to speak, upon the sandy bottom of the ocean. Dig down far enough anywhere upon the Island, and you will strike the original ocean sand bed. In some places this imported soil is hundreds of feet thick; in others only a few feet, and occasionally only a few inches. The last named spots are too leachy to retain moisture or fertilizers for profitable culture. But the great mass of the Island has a fair depth of good soil, and there is a large amount of good land awaiting the skill and labor of active and intelligent cultivators. Thousands of thriving homes will ere long be found where now there is a comparatively sparse population, and a considerable portion of the occupants are devoting their attention to gathering the products of the adjacent waters rather than the products of the soil. Some of these lands are still obtainable at a low price, much below that asked by speculators a few years ago. One only needs skill enough, or the advice of those who do have it, to avoid the extreme shallow soils referred to, in order to secure good land at very reasonable prices. Except as to the peculiar formation named, the above remarks apply to portions of New Jersey, Connecticut, and Eastern New York. The continued growth of this city, which is doubtless soon to be the great commercial Metropolis of the world, will enhance the value of these lands by furnishing a demand for all that can be produced upon them.

New Dairy Appliances.

Of the newer aids and helps towards perfect cleanliness in the dairy, we have the milking pail and the strainer, described below. It is a rather startling consideration that so many new contrivances should be continually introduced for the sole object of providing for cleanliness. It is a fact, nevertheless, that some provision for forcing clean practices upon dairymen is absolutely needed. With a plain, open, ordinary pail, milk may be drawn with perfect freedom from all disagreeable matters, even so much as a hair. If the cows are carded and

Fig. 1.—MILK-PAIL WITH STRAINER.

cleaned before they are milked, there may be no need for strainers upon the pail, or for strainers so arranged that foreign matters can not pass through them. But the fact is, many farmers and dairymen can not be induced to keep their cows clean, and therefore means must be provided to preserve the milk from contamination. Figure 1 represents a tin milking pail provided with a conical funnel and a wire gauze strainer above it. The milk is drawn into the strainer, and passes through it free from any accidental hairs, or other impurities, into the funnel, and thence into the pail. (A portion of the cover is cut away to show the funnel—of course, the real cover is entire.) If any restless cow upsets the pail, the milk will not be lost, because it can not flow out unless it is nearly filled, and then only a small quantity will escape at the worst. After a few trials with this pail, we conclude that while a neat and clean milker may not need it, yet it will be handy for him to have in case of accident, and that every careless milker may do well to have one and use it always. The same remark will apply to the strainer, shown at fig. 2. This consists of a seamless bowl, shown at the top, a conical strainer of wire gauze which screws into this, a second strainer of coarser gauze which fits over the first when it is needed, and a ring upon which the strainer may rest when in use. The purpose of the conical strainer is to prevent clogging of the gauze by sediment as this falls to the bottom, remaining in the rim, and does not pass through the cloth. This is a useful contrivance, and is the chief peculiarity of the strainer, and from which it takes its name of More's Pyramidal Strainer. The second and coarser strainer is used when, from any cause, the double straining may be thought advisable.

Fig. 2.—PYRAMIDAL STRAINER.

Hints and Helps for Farmers.

An item in the "Basket" for January last, which was headed "Send us Sketches for Engravings," has had two very pleasant results; it contained a general request to those having any contrivance or appliance that they found useful, to forward us sketches, that we might illustrate and make known the same to a million other readers. The two pleasant results are: the receipt of a large number of such sketches, as the profusion of small engravings in last month's paper and the present number bear witness, and the manifestation of a willingness on the part of our readers to help one another.

The Invitation is here Repeated,

and with emphasis. Recent experience has shown that numbers, if they know that such are welcome, are ready to send the results of their ingenuity in the way of labor-saving-and-helping contrivances, and we would say to all, that we wish to make this column what its heading indicates, one of real helpful hints to farmers. Though we shall use such illustrations in other parts of the paper, it is intended that the most important shall appear in this column. Do not refrain from sending a device because it is simple, and "one that any one would think of." It is the very simple affairs—those that, when once seen, make us wonder why *we* didn't think of them—that are generally the most useful and those that most need to be known. Do not withhold a sketch because you can not draw. Any one who can write his name can make such a sketch that, with proper measurements marked upon it, will be understood, and a few lines often give a clearer idea of an affair than a long description. Don't hesitate because your sketch is rough and rude: it will come to us confidentially, and our pencil, with the aid of our artists and engravers, will put it in proper shape for the public eye. We wish to make this

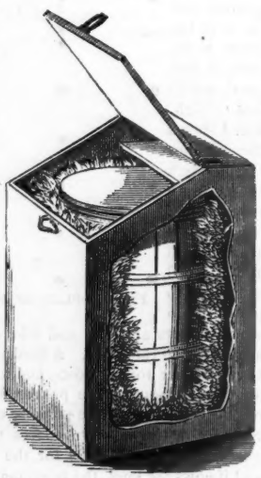


Fig. 1.—SAFETY SWILL-BARREL.

The Farmers Own Column,

to which each one can contribute, feeling that he is helping his brothers, and to which each one can come, to see what his brother farmers are doing to help him. With thanks to those who have Hinted and Helped, let us all do so still more freely.

A BOX FOR SALT.—Our correspondent, L. D. Snook, Yates Co., N. Y., sends us a design for a stationary salt-box, which may be attached to the fence, and allows stock at pasture to help themselves to salt at will, and at the same time protect the salt from loss by rains, or one may be placed in the barn-yard, where the animals can reach it. The box, as shown in the engraving (fig. 2), is a

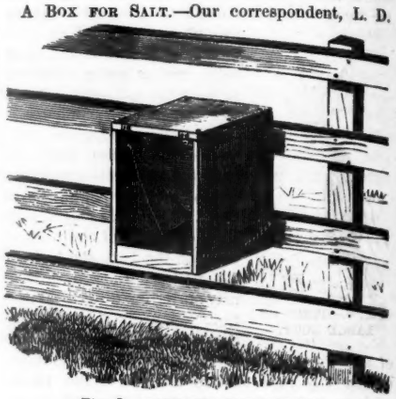


Fig. 2.—SALT-BOX FOR CATTLE.

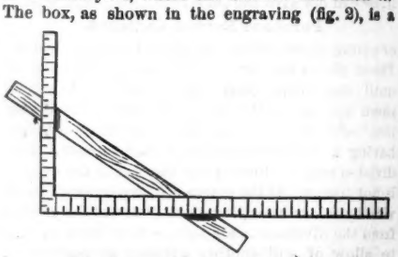


Fig. 3.—MEASURE FOR RAFTERS.

foot high and seven inches square, with a door swinging inwards and hung at the top. The bottom of the box may be hollowed out, for the better reception of the salt. Where there are many animals, it is better to have several boxes, as this will prevent interference. If the door is fastened open for a few days, until the animals learn the locality, they will soon learn to push it open themselves.

A SAFE SWILL-BARREL.—The ordinary slop-barrel is a fatal trap to fowls, which, tempted by the contents, are lured into it and drowned. It also freezes in the winter when exposed without protection. A contrivance for covering it and for preserving it from frost is shown at fig. 1. It consists of a box built around the barrel, leaving a space of a few inches, which is filled with chaff or cut straw. The box has a shelf near the top, upon which the dipper may be kept, and is covered with a lid, to prevent fowls from getting into the barrel. The lid should be so made that it cannot be left open.

CONTRIVANCE FOR MEASURING RAFTERS.—The method of measuring rafters recently described in these columns, seems to have been patented, though it has been in use, to the writer's knowledge, for over 25 years. That it is patented, will necessarily prevent carpenters and others from making use of the contrivance, lest they may be annoyed with a law-suit, or a claim for royalty, but the method itself is not subject to a patent, and can not be, al-

though the tool by which it is used may be patented. A correspondent sends us his method, which is as follows: Lay the square upon a piece of board of the width of the rafter, so that the half-width of the building in inches is marked on the blade, and the pitch of the roof on the tongue (see figure 3). Mark the pattern on the board, and then measure the distance between the marks in inches and fractions, which will represent the number of feet in length the rafter should be from heel to point. This plan can not be interfered with by any patent.

Fig. 4.—LOOP OF CORD.

A HORSE-BRUSH OF CORN-HUSKS.—"J. M.," of Burlington, N. J., sends his method of using the back of an old horse-brush, by filling it with strips of corn-husk. It makes so useful a brush that we think it would be worth while, if no old backs are at hand, to make it anew throughout. Whether an old back or a new is used, the method of operating is the same. The engravings, 4 and 5, show but a part of a back with a few holes, to give the method of working. Bore the back as full of half-inch holes as practicable; have a stout cord, and some strong husks shredded into strips half an inch or so wide. To begin, pass the cord down through the hole *a* and up through *b*, fig. 4; tie in a tight knot; then, with a button-hook or a hooked wire, pull the cord down through *b*, again, to form the loop *c*; now take a small bunch of the stripped husk, put it half-way through the loop, pull on the cord, and this will bring the tuft of husk into place, as in figure 5; pull down the cord through *c*, fig. 5, to make another loop, put in the husks and pull them into place as before. Continue in this manner until the holes are all filled, and make fast the cord. Trim the ends of the husks evenly, to make them about 1½ inch long, and finish by putting on a strap for the hand, as in figure 6. This makes a most useful stable brush to remove mud from a horse or other animal, and excellent to give a thorough rubbing down after performing a hard day's work.

Fig. 5.—HUSK IN PLACE.

Fig. 6.—BRUSH COMPLETE.

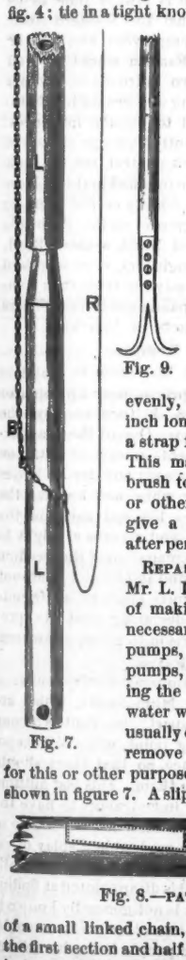


Fig. 7.

Fig. 9.

REPAIRING WOODEN PUMPS.—Mr. L. D. Snook sends his method of making repairs of a kind often necessary in the spring. Wooden pumps, whether suction or chain-pumps, often become crippled during the winter by the freezing of water within the log during an unusually cold spell. If it is desired to remove the log-tubing from a well for this or other purpose, it is most readily done as shown in figure 7. A slip-noose is formed in one end

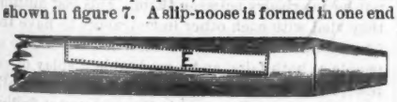


Fig. 8.—PATCH ON PUMP.

of a small linked chain, *B*, and slipped down over the first section and half way down the next, when it is drawn tight. The log is then raised bodily, until the lower part of upper section is within a foot or two of top of platform, when, by quick moves to

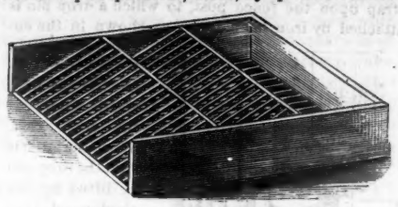


Fig. 10.—FISH TRAP.

the right and left, the upper section may be loosened and lifted off, and as there are usually but two more sections, they may be pulled up and removed without separation. To aid in removing the chain, when the pump is lowered again after repairs, a strong twine is attached to the noose, as shown at *R*. By pulling the string tight and loosening the chain a trifle, it may be easily slipped upwards and off. If a section cracks by freezing, remove it from the well, let it dry, and calk the seam with tow or fine wool; over this lay several thicknesses of dry cotton cloth, and upon this nail a strip of tin, as shown in figure 8. If the leak is a bad one, a double row of nails should be used. Paint the tin to prevent rusting. This method of stopping a leak is cheap and more efficacious than having an iron band shrunk upon it by the blacksmith. Should the chain of a chain-pump break and both ends fall out of reach, they can be picked up with an affair like that shown in figure 9. An iron bent in the form there shown is attached to a pole of sufficient length to reach the bottom of the well. To put on a chain without removing the tubing, lower one end down inside of the tube, and with this hook pick up at the bottom the end thus lowered.

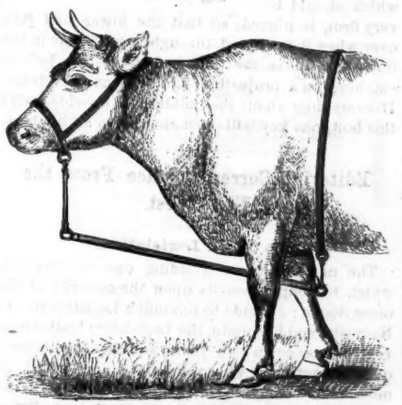


Fig. 11.—DEVICE TO PREVENT SELF-SUCKING.

SELF-SUCKING COWS.—A reader sends a method of preventing cows from sucking themselves. It consists of a stout rod of tough wood fastened to the halter and to a ring on a circingle or strap buckled around the body behind the shoulders, as shown at fig. 11. The strap between the rod to the head-stall, is about 12 inches long, and leaves the head free to graze or feed, but not to reach the udder to suck. Other devices are given in former volumes.

A FISH TRAP.—"J. P. R.," Osage Mission, Kansas, asks how to make a fish-trap for small streams. One method is shown at fig. 10. It is a box with 3 sides only, and open at the front, with a bottom made of narrow strips one inch wide, and a quarter or half an inch apart. There are two sloping frames of laths made in the same manner as the bottom, fitted into the box as shown in the engraving. The trap is set at the point of a low < shaped dam, or bank of stones, or brush, by which the water is raised so as to flow over the edge of the slatted frames, and pour through the bottom of the box into the stream below it; 10 to 12 inches is high enough for this purpose. The fish descending the stream, being led into the trap by the converging lines of the dam, pass with the water over the slatted frames, and fall into the box behind them, where they remain until they are taken out. The trap should be visited two or three times a day to take out the fish. At certain seasons of the year, when migratory fish pass down the streams, these traps take every fish, and their use is illegal in some States, on account of their destructiveness.

Caponizing—How it is Done.

Strange as it may seem, we have met with a number of ordinarily intelligent persons who supposed a Capon to belong to a distinct race of fowls, as do Games, Bantams, etc. For fear that others may have a similar notion, it may be well to say that a Capon is an altered male fowl, and bears the same relation to other fowls that an ox does to a bull, a wether to a ram, etc., and may be produced from any breed of fowls. A capon brings in market 50

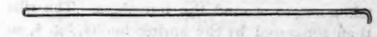


Fig. 1.—HOOK.

per cent more than an ordinary fowls, and often double the price of common male birds; besides, a

Fig. 2.—TWEEZERS.

capon will reach double the weight of a common fowl at the same age. As there is no difficulty

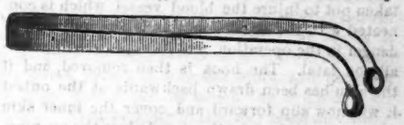


Fig. 3.—FORCEPS.

whatever in caponizing, and the instruments cost very little, the practice might become very general. Having practised the operation for several years, the writer can truly say that by using no more care, and with no more skill than are needed in operating upon a male pig, not more than one out of 30 or 40 fowls need be lost. For several years the writer has operated on from 12 to 30 fowls each year, and the loss during that time has not been more than five or six birds in all. The operation is best performed upon chickens about 3 months old, although it will succeed, if carefully done, with the majority of fowls when they are 10 or 12 months old. As with many other operations, this is one that can be learned most readily by seeing it done, and we advise those who would undertake it to procure instruction wherever it is available. Still, if one has a little confidence, he will meet with success if the directions here given are carefully followed. In the first place, a table is needed in which a few screw rings are inserted at convenient places; these are furnished with broad tapes, by which the bird

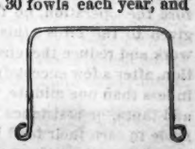


Fig. 4.—SPRING HOOK.

Fig. 5.—OPERATING TABLE AND POSITION OF FOWL.

is securely held during the operation. The best plan for a novice is to kill a bird and operate upon that first, in order to learn the position of the parts.

Lay the dead bird upon the table, dispose it as hereafter described, and then place the screw rings where they would be needed to secure a live fowl. One or two will be required to hold the wings, and one for each leg; six will be all that will ever be necessary. Place the bird upon the table, and fasten it down upon its left side, as shown at fig. 5, where the rings and tapes are seen. The spot where the opening is to be made is shown by the ×. Here the feathers are plucked, and an opening is made through the skin with a pair of sharp-pointed, long-bladed scissors. We have found these better than a knife. The skin is drawn to one side, and an opening is made with the scissors between the last two ribs for an inch and a half in length, great care being taken not to wound the intestines. The ribs are then separated by the spring hooks, fig. 4, so as to expose the inside. The intestines are gently moved out of the way with the handle of a teaspoon, and the glands or testicles will be seen attached to the back. The tissue which covers them is torn open with the hook, fig. 1, aided by the tweezers, fig. 2. The gland is then grasped with the forceps, fig. 3, and the cord is held by the tweezers. The gland is then twisted off by turning the forceps, and when this has been done the other one is removed in the same way. Care must be taken not to injure the blood vessel which is connected with the organs, as this is the only seat of danger in the operation, and its rupture will generally be fatal. The hook is then removed, and if the skin has been drawn backwards at the outset it will now slip forward and cover the inner skin which covers the intestines, and close the opening. No stitching is needed. A few feathers are drawn together on each side of the opening and plastered down upon the skin with the blood, where they will dry and form the best possible covering to the wound, which will begin to heal at once. The bird should be fed with a very little soft bread and milk for a few days after the operation, but should have a plenty of water. For two nights and one day before the operation, no food nor water should be given to the birds; this will greatly facilitate the work and reduce the chances of loss. The operation, after a few successful trials, may be performed in less than one minute, and by the use of the rings and tapes, no assistance is needed. Capons may be made to earn their food by fostering young chicks, to which business they take very kindly. To bring them to their full and most profitable size, they should be kept until the second year. By giving them corn-meal steeped in warm milk, and providing a warm house, they will grow during the whole winter, and their flesh will become very white, sweet, and juicy. A good capon of Light Brahmas will weigh 12 to 15 pounds, at 22 months old, and will bring at the holiday season $2.50 to $3.00 each. The instruments above described are to be procured of H. H. Stoddard, Esq., Hartford, Conn.

Door and Gate Fastenings.

Door fastenings give much trouble about farm buildings. Ordinary latches are too weak, and are useless in a short time. The most useful fastenings are those which can be made cheaply by any blacksmith, and which can be fixed upon the doors by means of bolts, or such bolts of wood as can be made at home. In all cases they should be so arranged that animals can not open them. For gates, a heavy wooden bolt made to slide into a catch in the post, and held there by a falling pin, will be found strong and useful. This is shown at fig. 1. The latch slides in two iron bands bolted to the bar of the gate, and passes through a mortice in the gate post. It passes also through a mortice or strap upon the fence post, to which a drop pin is attached by iron band loops, as shown in the engraving. The pin is kept from falling too far by a small knob at the upper part. When the latch is shut the drop pin is lifted by the sloping end of the latch, and drops into the notch, which holds it securely. The latch is moved by means of a pin near the gate-post, and this prevents it from going too far through the mortice. A bolt for a barn or stable door is shown at fig. 2. This is placed inside, and is moved by putting the hand through an opening in the door. The door is provided with a spring by which it is kept shut when not used. A very safe and simple fastening for barn and stable doors is the bolt and key, shown at fig. 3. This bolt is moved by a key, shown in the engraving; the shaft which should be very firm, is hinged, so that the lower half falls over when it is passed through a small hole in the door just above the bolt, and moves the bolt by catching on a projecting pin between the straps. If every door about the buildings is provided with this bolt, one key will open and fasten all of them.

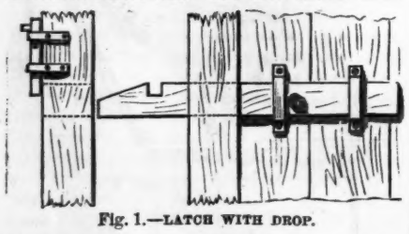


Fig. 1.—LATCH WITH DROP.

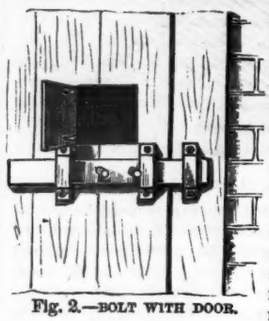


Fig. 2.—BOLT WITH DOOR.

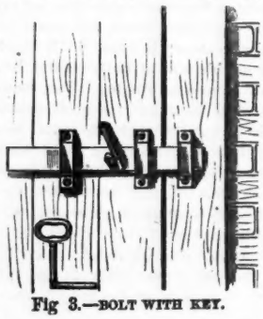


Fig 3.—BOLT WITH KEY.

Editorial Correspondence From the Far West.

Too Much Legislation.

The new States are avoiding one of the evils which has borne heavily upon the majority of the older States; I allude to too much Legislation. In Nebraska and Colorado, the Legislative bodies convene only once in two years, and the Legislatures of Minnesota and Wisconsin have now voted, almost unanimously, to substitute the biennial for the annual sessions. "The least governed the best governed;" "the fewer and simpler the laws the better;" are old maxims, and it is gratifying to observe that Maine and Connecticut are following the example of the Western States in this matter. All the other Eastern, as well as the Middle and Southern States, should not delay action in the same direction, and if the farmers would consider the benefits resulting therefrom, they would compel such action on the part of their representatives. Take New York State, for example, concerning whose Legislature I can speak from personal experience. Every year this body convenes, it entails upon the State an expenditure of $312,000, of which sum the Senate spends $54,000, and the Assembly, $258,000. If any advantage accrued to them from this large expenditure of public money, the people might be reconciled to it, but the bulk of the time of one session is consumed in repealing or amending enactments passed by previous sessions. Especially is this true, where the political complexion of successive bodies undergoes a change, and first one party and then another party gets the upper hand. People through the State are kept in a condition of disquietude and the final adjournment brings them the same sense of relief which is experienced by the Nation at large when Congress disbands. There is a considerable class in New York State who come to be professional hangers-on at Albany, and look to the winter's session for their bread and butter. The lobbyists or legislative corruptors find encouragement and gain in yearly sessions. These annual sessions are productive of many other evils, all of which might be avoided or materially mitigated by substituting bi-ennial or tri-ennial. What is true of New York is true, to a greater or less extent, of all other States. If the Legislatures convened but once in three or five years the people would then be able to procure about all the legislation their wants required, especially with a few wholesome general laws conferring upon local bodies and authorities the power for enacting local legislation. This is a matter in which the hosts of the *American Agriculturist* readers in all the States are personally interested.

Courteous Railway Officials.

The urbanity of conductors and other employees on the railroads contributes materially to the pleasure of travel in the West and North-west. Every one is impressed with their obliging disposition and civility as contrasted with the impatience and often rudeness of the average railway employee in some older States. In journeying ten thousand miles over the roads in Illinois, Iowa, Wisconsin, Minnesota, and in the vast country west of the Missouri River, I have everywhere found conductors, ticket agents, baggage-men, and brakesmen ready and willing to answer inquiries, and to contribute every way in their power to the comfort and pleasure of travellers. It is a common thing for the conductors on the long stretch of the Union Pacific Railroad to voluntarially seat themselves near you and point out the various objects of interest as the train speeds through Nebraska, Wyoming, and Utah. This is a new and pleasant experience to one whose railroad travel may perhaps have been confined to the Eastern States. Perhaps one explanation of this civility and courtesy lies in the fact that the railway trains in the newer States are less crowded, and the employees have therefore more time to be accommodating. But there is always time to be civil, and it is apparent that the Western roads make a point of securing employees who will be polite to the public. The Eastern would do well to pattern after the Western railroads in another matter—that is, in rewarding and promoting faithful servants without regard to outside influences. Some of these roads frequently undergo change in the general management and control, but the rank and file of the employees are retained in their places to be promoted as zeal and fidelity entitle them to it. Not long ago three engineers on the Peninsula branch of the Chicago and North-western Road, who had been faithful as engineers, were surprised one morning at simultaneously receiving their commissions as conductors of passenger trains. There is good management in acts of this kind.

Prefers to Remain.

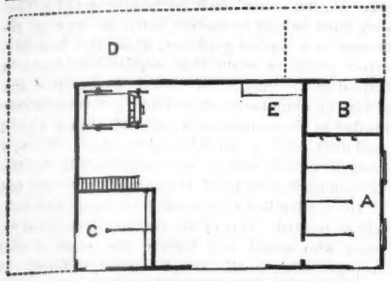
Nebraska contracts with Mr. Stout to maintain the inmates of the State prison, near Lincoln, for 60 cents a head, and Mr. S., in turn, employs the convicts at a variety of labor. One of these, a murderer, sentenced for life, herds a drove of cattle on the prison farm, and can be seen any day on horseback, flourishing his long whip, and keeping the cattle in line. He leaves his cell early in the morning to join his herd, and returns at night to his secure quarters. The explanation of the freedom allowed this convict, is found in the fact that, not long ago, he frustrated efforts made by his friends to secure his pardon, declaring that he preferred to remain in the prison to going elsewhere.

Rival Fairs.

There is a somewhat amusing rivalry between the cities of St. Paul and Minneapolis, which are only about twelve miles apart. St. Paul is a commercial city or distributing point, while Minneapolis is a manufacturing place, so that there should not be any rivalry between them. This last autumn they vied with each other in endeavors to have the largest fair. There was an immense concourse of people at both fairs, and a creditable display of cereals, fruit, etc. One coming to Minnesota naturally visits Minnehaha Falls, and is disappointed at finding a miniature waterfall. It is not generally known to the public that there are two other pretty cascades near by, one of which the people living hereabouts have facetiously named "Minnegiggle."

A Convenient Small Barn and Stable.

A plan for a small barn and stable to accommodate two cows, two horses, and a carriage, a place for pigs, with yard, and conveniences for feeding and for handling manure, is given herewith. The building is 38 x 24 feet, and may be 16 feet to the eaves. It is divided into a two-stall stable, with harness room and a passage to the barn floor or feeding floor. The pig-pen is shown at *B;* into this the litter may be thrown from the stable through a half door made to close tightly. The cow-stable,



PLAN OF CONVENIENT STABLE, YARD, ETC.

C, for 2 cows, opens into the yard, *D*, as well as at the front. There are conveniences for feeding all the animals from the main floor, and a place for the carriage is provided, as shown in the plan. A stairway leads to the upper floor, where hay and feed may be stored. The cost of such a building should not be more than $200 (or but a little over that), all completed. The whole floor should be of 2-inch spruce or oak plank; the frame of oak or spruce, with 8 x 6 sills, 6 x 6 corner posts and plates; the beams 3 x 8, and the studs 3 x 4; the boarding may be of dressed pine, 12 inches wide, and battened, and the upper floor of matched boards, to prevent dust falling through.

A Portable Shelter for Sows.

Those who raise swine upon a large scale in the great corn-producing States, find it very necessary to have a shelter for their sows at pigging time,

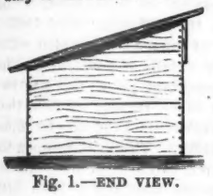


Fig. 1.—END VIEW.

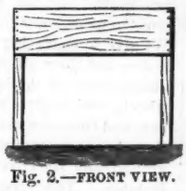


Fig. 2.—FRONT VIEW.

and several portable pens have been devised for such use. "Mr. G. N. M.," of Shawnee Mound, Ind., sends us sketches of a pen of this kind, which seems to meet all the requirements of affording shelter, protecting the young pigs from injury by the sow, of portability and ease of construction. Figure 1 shows an end view, fig. 2 the front, and fig. 3 a perspective view, giving both front and end.

Fig. 3.—SHELTER COMPLETE.

For pens of this kind, planks 12 feet long, 12 inches wide, and one inch thick, and others of the same length and thickness but 10 inches wide, cut to the best advantage; scantling 2 by 2 inches is needed for the corner posts. For the ends and back, the 12-inch plank is cut into four pieces of 3 feet each; the 10-in. plank is cut from corner to corner to make the slope for the roof. For the front, a 10-inch plank, 5 feet long is nailed to two pieces of scantling 3 ft. 10 inches high. The sides are put on as in fig. 1; the rear and sides are nailed to other corner posts, and a roof is nailed on to complete the whole. Mr. M. supplies the pen to the sow when she has made her bed, and finds the size is such, that she cannot hurt the pigs, as they have sufficient room in the corners. It is so light as to be readily turned, when the direction of a storm makes it necessary to afford protection from a particular quarter. He regards this, all things considered, as the best shelter that has been tested in his and the adjoining States. When out of use, they are stacked in an open shed, or piled in the field and covered with boards.

Gardens.—Where Does This Hit, and Fit?

A correspondent, whose name and locality we omit by request, writes:—"I have been looking about and figuring up, with this result: Around me there are twenty farms, averaging over 100 cultivated acres each, and not bad farms either. Excluding the patches of early corn and potatoes, the total amount of space devoted to house gardening is less than one acre on the whole twenty farms—not one acre in 2,000!....On two farms there are good gardens; on some hardly an apology for one. ....I have for the first time succeeded in getting up a small club of subscribers for the *American Agriculturist*. Can't you stir them up on this garden question?...."—This is a pretty hard report, but it partly applies in far too many localities. Still, we can see that, though it goes on slowly, the past ten years have shown an improvement, and we trust to see it more marked in the future. At all events we shall work to this end. We have something to say on the subject in another article.

How to Mend a Rope.

A splice is made by untwisting the strands of each end for a foot or 18 inches, as shown at *a* (fig. 1). When the twisted parts are brought together singly, one end of the splice is bound with a piece of cord to hold the parts while one-half the splice is being made. Then by means of a smooth and greased wooden peg, seen at *b*, the second of the rope strands is loosened and raised, so that the upper loose strand can be passed under it, and drawn tight. The next strand is raised by the peg, and the second loose strand passed under it; and so with the third; each loose strand passing under and over the twisted strands alternately. This is again repeated, and the strands drawn tight by aid of the wooden peg. The loose strands are then shaved down gradually to a point, and the previous operation repeated until the joint is made quite secure; when the ends of the strand are cut off an inch from the rope. This is shown in part at *c*. To make a smooth joint, the splice, after the loose strands are twice passed beneath the twisted ones, they may be opened, shaved down, and spread over the rope; the splice is then bound very tightly with spun-yarn or tarred twine, and beaten hard with a mallet. It is always best to have all the pulleys large enough to admit of mended ropes passing over them without any hitch.

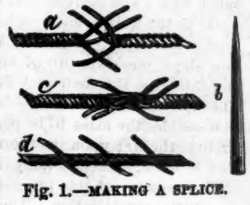


Fig. 1.—MAKING A SPLICE.

A long splice makes a neat job, and is shown at *d*. Bring the untwisted ends together, as in the previous case; then untwist one strand for a foot or more, and fill up the space with the opposite loose strand, beating it down firmly.

Fig. 2.—CLASPS.

Then turn the rope, and unwind a strand, filling the space with the opposite loose strand, and securing it temporarily. The long strands just unwound are then cut off, and the ends temporarily secured.

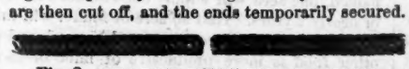


Fig. 3.—THE ROPE READY FOR THE CLASPS.

The remaining loose strands are split into two equal parts, and each crossed with the opposite half strands; twisting the two joined half strands together, and passing them under two or three strands of the rope, as in the short splice above described. Do the same with the other loose ends, beat the splice down, and stretch it to make a smooth joint. To mend a rope not used for tackle, take thin sheet copper, made as shown in figure 2, which will clasp the rope for a foot or 18 inches. Cut the ends of the broken rope off square, and bring them together; fit them into the copper clasps, holding

Fig. 4.—THE ROPE MENDED.

them in a vice. Then make holes through the rope where the holes appear in the clasps, and rivet the parts securely. The mended rope appears at fig. 4.

How Cream Cheese is Made.

A very rich and toothsome cheese is made of pure cream, and eaten while fresh. This is sold in the

Fig. 1.—FRAME.

Fig. 2.—MAT.

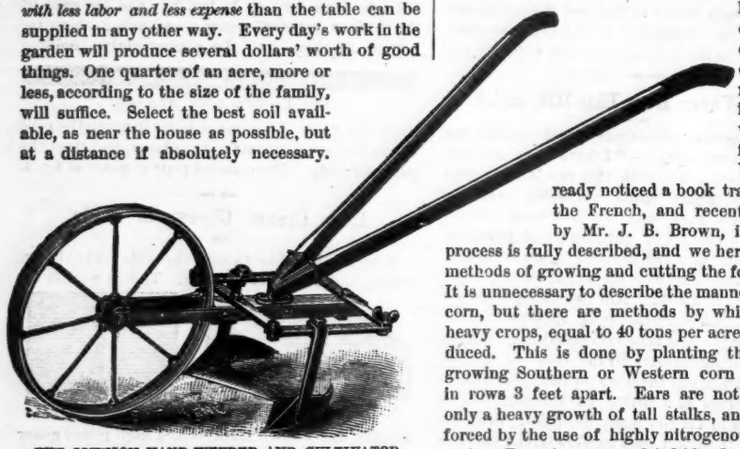
English and French markets at a high price, generally for more than butter, and is often made in country houses for domestic use. The cream is taken from the milk as soon as it is thick, but while yet sweet, placed in a muslin cloth, and hung up to drain over a pan in which the drippings are caught. After hanging in this way in an airy, clean dairy-room for 20 hours, it becomes firm enough to be placed in the moulds. The mould is a small wooden box or frame about 5 inches long, 3 wide, and 1¼ thick, without bottom or top (figure 1). This is placed upon a layer of clean smooth straw, and a mat of rushes, made as shown in figure 2, is placed under it. The cream is then put into the mould, which is lined with a neatly fitting square piece of muslin folded at the corners; this is turned down over the cream and a second mat of rushes, which fits the mould, is laid upon it (figure 3). A block of wood and a light weight is placed on the mat to press the cream into the shape of the mould, where it remains until it has become set to the shape, which is in two or three hours. The cheese is marked on the top and bottom by the rushes of the mats, which give it a corrugated appearance. It is fit for use as soon as it is set. When sent to market it is not removed from the moulds until it is sold for use. No salt is used in the preparation; this is added as it is eaten. The ordinary price of this cheese is the same as that of the best butter. When made for home use, and eaten fresh, it is a choice delicacy. It is sparingly made in the vicinity of New York, and sent to market wrapped in tinfoil.

Fig. 3.

What Garden Have You?

The best paying plot on any farm, and the one yielding the most enjoyment, too, is the Vegetable Garden—or "Kitchen Garden," as it is frequently called, and quite appropriately, especially when the "Kitchen folks" have the chief or sole care of it. A good supply of garden products for the table *costs less* than the standard bread, meat, and potatoes, is more healthful and nourishing than all corn beef, salt pork, and the small assortment usually found on the farmer's table. Need we add anything about palatableness, comfort, home enjoyment? Contrast a table set nearly the year round with bread, salt pork, corned beef, potatoes, boiled cabbage, varied with hash, mush, buckwheats, and occasionally a few other items, with a table well supplied in succession and abundantly with Asparagus, Green Peas, Lima Beans, String Beans, Sweet Corn, Radishes, Carrots, Beets, Parsnips, Celery, Salsify, Turnips, Cauliflower, Spinach, Lettuce, Egg Plants, Tomatoes (all the year), Rhubarb, Okra, Squashes, Onions, Cabbage, Cucumbers (?), and other things, —filled in with Currants, Strawberries, Raspber-

ries, Blackberries, not to mention Grapes, Pears, etc.—We do not accept the standing excuse, "I am too poor, too hard driven, too much to do in my fields, to bother with the garden." We repeat, *with emphasis*, that every farmer can have most, if not all the above pleasant and healthful variety *with less labor and less expense* than the table can be supplied in any other way. Every day's work in the garden will produce several dollars' worth of good things. One quarter of an acre, more or less, according to the size of the family, will suffice. Select the best soil available, as near the house as possible, but at a distance if absolutely necessary.



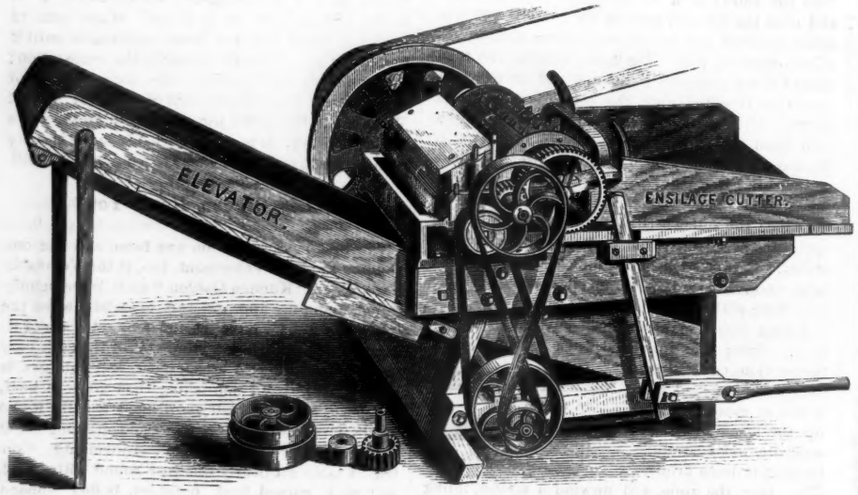
THE JOHNSON HAND-WEEDER AND CULTIVATOR.

A good loam where water never stands is desirable. Heavy clay will not do well without a good deal of preparation. If not naturally dry, underdraining is desirable, but even an open ditch around the plot, and one or two through it if needed, may answer for the present. Plow and harrow fine, working in a liberal supply of the best well rotted manure that can be obtained—half a wagon load on every square rod will be all the better, but much less can be got along with. The directions for planting, cultivation, etc., are given in our "Hints for Work," from time to time, beginning back to the February number. For the best varieties of vegetables, see article on page 84 of March *American Agriculturist*.

Preservation of Green Fodder.

There have been so-called revolutions in agriculture, and it is not at all improbable there may be others in store for us. The introduction of clover and of root-growing were worthy of being called revolutions, and it may be that the new process of preserving green fodder will bring about such a change in our methods as to become a revolution. This, however, remains to be seen. It is certainly sufficiently promising to attract the attention of every farmer in the country. The process has been explained and described already in the *American Agriculturist*. (See June, 1875, and Sept., 1877.) To those who may not have read this account, we will say that the process consists in packing away the cut fodder, alternated with straw, in large tanks or "silos" of mason work, where it is covered with soil to exclude the air and kept down by means of heavy weights. There have been great improvements in the method, and more may be looked for so soon as American farmers take hold of it. Mr. Morris, a large farmer of Maryland, has the past year put away in silos several hundred tons of corn-fodder cut into chaff, and is now feeding it to his stock with perfect success. We have already noticed a book translated from the French, and recently published by Mr. J. B. Brown, in which the process is fully described, and we here refer to the methods of growing and cutting the fodder for use. It is unnecessary to describe the manner of growing corn, but there are methods by which unusually heavy crops, equal to 40 tons per acre, may be produced. This is done by planting the tall, heavy growing Southern or Western corn very closely in rows 3 feet apart. Ears are not looked for—only a heavy growth of tall stalks, and this can be forced by the use of highly nitrogenous fertilizers, such as Peruvian guano, dried blood, or fish guano. When the corn is in tassel and fully grown, it is cut down and carted at once to the silos. There will be a large number of immature ears, and these add to the value of the fodder. The stalks should then be cut up into chaff, and upon the thoroughness with which this is done the success of the process of curing very much depends. A powerful machine is needed for this purpose, which is shown in the engraving. This machine is much like an ordinary fodder-cutter in construction, but is very heavy and compact, and is provided with a spiked feed roller, which carries the stalks to the knives and crushes them at the same time. The rapidly revolving knives cut the stalks into slices one-sixteenth of an inch thick, and an elevator takes the chaff and deposits it in the silo. The fine chaffing of the fodder is very important, as it enables the mass to be packed so closely as to exclude the air; upon the thoroughness with which this is done, success wholly depends.

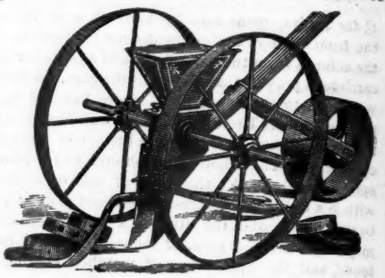
The economy of this process must be evident on very little consideration. The yield of an acre of well grown corn-fodder may be 25 to 40 tons. The ration of one cow per day is 60 to 80 pounds. With the least yield and the largest consumption here named, one acre will supply one cow for 625 days, or nearly 2 years. Half an acre of fodder will then keep a cow for one year in a stall or yard, and no other food is more productive of milk or more healthful than this. It is plain, then, that if this method can be introduced into our farm practice, a great economy will result, sufficient perhaps to entitle it to be called a revolution in our agriculture.



MACHINE FOR CUTTING FODDER FOR ENSILAGE.

Market and Farm-Garden Implements.

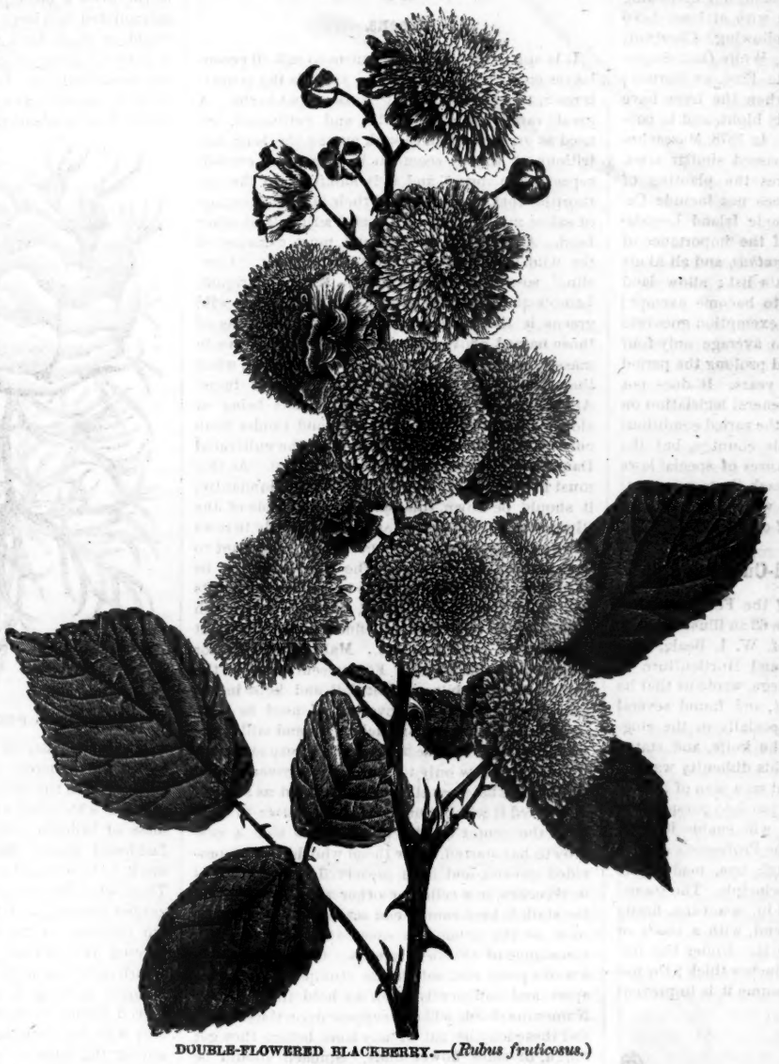
It is a fact, and the sooner it is admitted and acted upon the better, that farming in thickly settled localities in the older States—except dairy farming—in order to be profitable, must be gardening rather than farming. So long as a farmer within reach of a good market for cabbages and carrots will try to compete with cheap land and railroads by raising Indian corn, farming will be a poor business for him. We hardly know where to draw the line between market-gardening and farm-gardening. If one raises such perishable articles that they must be sent to market daily, he may be regarded as a market-gardener, while the farm-gardener produces crops that require less haste in disposing of them. If asked what, after and always an abundance of manure, a farm-gardener needed in his operations, we should answer a good seed-drill, and a good hand-weeder. To sow enough carrot, onion, or similar seeds in the kitchen garden by hand, is not much of a task, but let the garden bed be extended to acres, and help will be needed. One of the first helps required by those who would sow largely the seeds of root crops, or other small seeds, is a good seed-drill. A good drill must be readily adjusted to sow seed of different sizes; it must sow regularly—not failing, through any clogging, to discharge surely; it must not waste seed; it must open the ground to the required depth, and cover the seed evenly. As a machine to meet all these requirements we have, among the various styles we have tried, found none to be superior to the "Monitor Seed Drill." We give an engraving of the machine, which, while it does not show all the details of construction, indicates some of the important points; it has two wheels, which give a more regular motion than one, and these are movable upon the axle to adjust them to any desired width. The drill, to open the ground, and the coverer, to close it, are both adjustable. The seeds are discharged from little cavities or cups in the circumference of iron rolls, several sizes of which are shown near the machine. Certainty of operation is the first requisite in a seed-sower—the work can not be verified until days—in some cases weeks after, and blanks caused by a failure to deliver are sometimes past remedy. In this respect the machine has not disappointed us. Some very useful seed-sowers are so arranged that they may be converted into efficient weeding implements, but where operations are on a large scale and varied, we prefer separate implements, as it often happens that weeding must be done just when seeds should be sown. The number of devices in the way of hand-weeders is now quite large, and while in many crops we can not do away with thumb and finger work altogether, the amount of this has been so lessened that it has ceased to be formidable, and a good hand-weeder is essential to success with many crops. We give an engraving of a new hand-weeder, the "Johnson Hand-Weeder and Cultivator." The shape of the blade allows it to be run very near the rows of young plants, and it is readily adjustable to different widths of rows. One of our associates, who tried this implement last season, writes: "The cutters work below the surface, severing the roots of the weeds, while the wings scrape the parts of the weeds that are above ground and leave them to wither and die; some improvements have been made since Mr. H. first tried the implement at my place, and it now mellows the ground in a surprising manner."



THE MONITOR SEED-DRILL.

Double-flowered Blackberries.

The general tendency of the plants of the Rose Family to produce double flowers is manifested in the genus *Rubus*, to which the Blackberry and Raspberry both belong. The "doubling" in these flowers is mainly due to a conversion of the parts essential to the production of fruit,—the stamens and pistils—into petals; or to speak more acurately, for there is no real "conversion" in the sense of transformation, the development of those parts of the flower, which ordinarily appear as stamens and pistils, as small petals. Many of our readers can recollect a plant popular many years ago as the "Bridal Rose." This is from one to two feet high, though it may be grown much taller, has compound leaves of a lively green, and double white flowers, about two inches across at the ends of the branches. Probably few who have cultivated it under its common name, "Bridal Rose," and the less frequent one—"Brier-Rose," have ever suspected that it was not a Rose, but a double kind of Blackberry from China and other eastern countries. Like many other good old plants, this is rarely found in the catalogues, it having been crowded aside by newer, but not more deserving plants, and is seldom seen except in window culture now and then. Its botanical name, *Rubus rosæfolius*, indicates the resemblance of its foliage to that of a rose. This is a tender species, but we have hardy double-flowered blackberries; these, so far as we are aware, are forms of the common Blackberry or Bramble of Europe, *Rubus fruticosus*. There are those with white, pale-rose and red flowers, in which the regular structure of the flowers is completely lost, and they are merely masses of delicate narrow petals, and appear as seen in the engraving, more like the flowers of the double European Daisy, than like those of the Blackberry. The petals have a delicacy of texture that makes the flowers very pleasing. This shrub seems to be quite overlooked by our planters, as we do not find it offered by our leading nurserymen, and we only succeeded in procuring it a few years ago from a private garden. It has real merit as an ornamental shrub, and will succeed, if left to ramble, in the poorest soil, and it will repay good cultivation and careful training to a trellis or against some building. The stems of the European Blackberry are not, like those of our own, renewed every year, but continue for three or more years; hence in pruning, the stems that have bloomed need not be cut away entirely, but at the annual pruning only the older wood need to be removed when the stems become crowded. This tendency of the Blackberry to form double flowers is a matter of some importance to fruit growers. The cultivated variety, "Wilson's Early" often bears flowers that are double, or partly so, and as the extra petals are formed at the expense of the parts concerned in the production of fruit, the occurrence of double flowers greatly diminishes the crop. A stock of this variety sometimes, after having given satisfactory crops, will produce partly double flowers, and become nearly worthless. In such a case nothing can be done except to replace the plants from some patch in which this tendency has not manifested itself. The *Rubus* mostly cultivated for ornament is a Raspberry rather than a Blackberry, *Rubus odoratus*, the "Flowering Raspberry." This has rich crimson flowers two inches across, and could these, as the fruit is worthless, be induced to become double, it would be a great gain; so far as our observation goes, we have seen in this but little tendency towards double flowers; a single stamen or so becoming petal-like is all that we have noticed in the flowers of this species.



DOUBLE-FLOWERED BLACKBERRY.—(*Rubus fruticosus.*)

Zinc Labels for Orchard and Garden.

Among the most permanent labels, are those made of sheet zinc, as this metal, after its surface becomes well oxidized by the action of the air, is covered with a film of colorless oxide which prevents any further change. The "Revue Horticole" recently gave the formulas of the various inks that have been proposed for writing on the zinc labels; it gives seven of them, all of which, save one, consist of a soluble salt of copper, some of them having lamp-black added, in order that the writing may be visible at once. In writing on zinc with a solution of some copper salt, decomposition at once takes place, and the black oxide of copper is deposited upon the zinc as a black film, which adheres with great firmness and is very durable. After enumerating the various inks of which copper forms a part, the editor gives preference to a simple strong solution of sulphate of copper ("Blue Vitriol"), without other addition. Our friend, Doct. Seidhoff, made the same discovery many years ago, and it was published at the time in our pages. All one need do, is to put some bits of Blue Vitriol into a bottle, add a little water, and so long as any of the vitriol remains undissolved, the solution will be saturated—that is, as strong as can be. This, if used with a quill pen, upon clean zinc, will give at once very black writing. The ink which the "Revue" prefers to any of those containing copper, is made of one part of Chloride of Platinum in 50 parts of water. This is used in the same manner as the other, and gives at once a writing of the most intense black, and indestructible. In writing with any of these metallic inks, the surface of the zinc label should be made perfectly clean. This may be done by scouring the surface to be written upon, with very fine sand, or better, powdered pumice stone, and muriatic acid so diluted with water, as to have a very sharp, sour taste. A bit of rag is to be wetted with this, and touched to the sand or powdered pummice; one side of the zinc label is to be rubbed until bright, when it is to be washed and dropped into a vessel of water, where it may remain until written upon. Before writing, remove the labels and make them thoroughly dry. This is a method of labeling, much in use abroad, and more or less in this country. Several years ago, our venerable friend, Col. Marshall P. Wilder, made known a method of using zinc labels, which is not the least in importance among his many services to horticulture. It is simply to write upon a bright zinc surface, with a common lead-pencil. The zinc oxidizes and fixes the indestructible plumbago, and this protects the written surface, so that while the rest of the label may slowly wear away by the action of the elements, the portion protected by the writing remains unchanged, and even more legible with age. This label has every superiority over those written with the inks above described, save one—it is not so distinct at first; but if carefully written, it can be read without difficulty, and is quite indelible, as shown by the test of over 20 years. Labels may be made of any desirable shape, and hung by means of a copper wire passed through a hole at one end; or they may be cut long wedge-shaped, with a very long, tapering portion, which is to be coiled around a twig, but not closely.

State Aid to Tree Planting.

Some of the far Western States, the broad prairie portions of which are quite tree-less, a few years ago passed laws for the encouragement of tree-planting; but it is quite a recent thing for the older States to legislate in favor of forestry. In this some of the New England States have taken the lead, and have wisely set about repairing the loss of forest growth, while yet there remain some wooded tracts that have not fallen before the wicked waste that has laid bare so much land which can never be used for any other purpose than for growing trees. Knowing that Prof. C. S. Sargent, Director of the Arnold Arboretum, of Harvard University, had been active in presenting the subject to the Legislature of at least one State, we re-

quested him to give us the leading features of the laws relating to tree-planting as they now stand in the New England States. Prof. S. kindly furnishes the following to the *American Agriculturist:*

"It should be more generally understood, that already in three of the New England States, laws have been passed to encourage the planting of forest trees. In 1877, Connecticut passed a law exempting from all taxation any land, not exceeding in value $15 an acre, if planted with at least 1,200 trees to the acre of any of the following: Chestnut, Locust, Hickory, Ash, Catalpa, White Oak, Sugar-Maple, European Larch, White Pine, or Spruce; the exemption to take effect when the trees have reached an average of six feet in hight, and to continue for a period of ten years. In 1878, Massachusetts and Rhode Island both passed similar laws. That of Massachusetts requires the planting of 2,000 trees to the acre, and does not include Catalpa, Locust, or Spruce. Rhode Island Legislators take a still broader view of the importance of forest-growing. They add *Ailanthus*, and all kinds of Pines, to the Massachusetts list; allow land worth as much as $25 an acre to become exempt; advance the period when such exemption goes into effect by requiring the trees to average only four feet in hight instead of six, and prolong the period of such exemption to fifteen years. It does not seem possible to suggest any general legislation on this subject which could meet the varied conditions and requirements of the whole country, but the passage by other State Legislatures of special laws framed to meet the needs of each State is important, and should interest all to whom the future of American forests is a subject of concern. C. S. S."

Prof. Beale's Sod-Cutter.

Soon after the appearance of the February number, in which appeared on page 63 an illustration of a sod-cutting implement, Prof. W. I. Beale, who occupies the chair of Botany and Horticulture at the Michigan Agricultural College, wrote us that he had tried a similar implement, and found several difficulties in the working, especially in the clogging of the sod in front of the knife, and stated that he had a cutter in which this difficulty was obviated. At our request he sent us a plan of his implement, which our artist has put into perspective, and this, with Prof. B.'s note, will enable its construction to be understood. The Professor's experimental implement was a rough one, made from materials at hand, to test the principle. The framework is of two pieces of 4 x 4-in. scantling, firmly put together at the forward end, with a clevis or hook to hitch the animals to it. Under the forward end he places a block 2½ inches thick; the use of this is not stated, but we assume it is to prevent

PROF. BEALE'S SOD-CUTTER.

running too deep. A pair of plow handles are attached for guiding the implement. The knife is a piece of saw plate, 6 inches wide, sharp at the forward edge, and bent up at right angles to cut 12 inches wide: this is so bolted to the frame that the cutting edge is 2½ inches below the lower edge of the roller immediately in front of it. This roller, which is an important part of the implement, is 6 inches in diameter, and 6 inches long, the bearings of which run in boxes attached to the frame. The cutting edge of the knife must be 2½ inches (or the desired thickness of sod) below the lower edge of the roller, and the knife edge of the roller must be *in a line* with the rear surface. These points being secured, the attachment of the knife and roller to the frame may be effected by any method that seems best. In using two horses, Prof. Beale had the driver stand upon the machine, but suggests, if he had much cutting to do at one time, he would load the frame to the proper working weight. Though this was a mere trial implement and roughly made, Prof. B. sums up the whole case by saying "It cuts well."

Greens.

It is apparently an Americanism to call all green-leaves cooked as food—greens, yet it is the general term in this country for all sorts of pot-herbs. A great variety of plants, wild and cultivated, are used as greens, which though among the least nutritious of foods, seem to be generally craved, especially in spring, and it is admitted by the authorities that, on account of their large percentage of saline matters, they are useful adjuncts to other food. Among the earliest and most common of the wild greens are the Dandelion, Dock, "Cowslip," so-called, but properly Marsh Marigold, Lamb's-quarter, Nettles, etc. One objection to wild greens is the time taken to collect them, as of those named above only the "Cowslip" grows in masses, and is sure to be found when wanted, while the others must be searched for here and there. Another objection is, that wild plants being of slower growth are less succulent and tender than cultivated. One who has once tried the cultivated Dandelion will not care for the wild plant. As this must grow a year before it will yield abundantly, it should be sown this spring. Get seeds of the "Improved;" sow as soon as the soil is ready, in rows two feet apart, when well up, thin or transplant to a foot apart in the row. The thinnings may be used this spring, but for years thereafter the plants will yield two, if not more, cuttings early each spring of the tenderest and finest greens, without hunting all over the lots. Make provision for future years this spring. For present supplies, the earliest is Spinach sown last fall and kept in the ground one winter by covering, if need be with straw. But few grow spinach at all, and still fewer winter it over. Those who were so fortunate as to sow it, have now only to remove the covering and stir the soil between the rows. If used as soon as uncovered it will be tough, and it is better to wait until the center of the plant shows that a new growth has started. For those who have not provided spinach, and have preserved their cabbages in trenches, in a cellar or other method by which the stalk is kept sound, can set out the stumps as soon as the ground is open and soon have an abundance of excellent greens. Open a trench in a warm place and set in the stumps about a foot apart and sufficiently deep to hold them firmly. Numerous shoots will soon appear upon the stumps, and these may be cut at any time before they get tough, or show flower buds. Spinach should be sown among the earliest crops in rich warm soil; make the rows 15 inches apart, and sow in the same manner as beets. When the leaves are an inch or two long, thin to four inches apart, using the thinnings; the other plants will soon become large, and may be used until the flower-stalk shows. It is better to sow a row every week until the middle of May. In warm weather it soon runs up to seed, and is useless. In sowing early Beets, put in an abundance of seed, to allow of a supply of "Beet-greens," by many considered preferable to all others, not excepting spinach. If the rows of Beets are a foot apart they should be thinned to six inches, if 15 inches apart, thin to four inches. For use, the thinnings are washed thoroughly, and both root and top are cooked. "Egyptian" is best.

The Fine-leaved Pæony.

Those familiar with the ordinary Pæony only, would never suspect from the foliage of the Fine-leaved Pæony (*Pæonia tenuifolia*), that it belonged to the same genus. This—which is also called the Fennel-leaved Pæony—is a native of Siberia, and is a stranger to our gardens, for no other reason than the fact that it is not generally known. It is perfectly hardy, and once planted, will increase in beauty from year to year; though introduced over a century ago, it is yet rarely in private or commercial gardens. We have had a clump of the single-flowered form these many years, and have recently procured the double-flowered. Many stems a foot or more high, are thrown up from the root; these are crowded with dark green leaves which are cut into very slender divisions, producing in the mass a most pleasing effect. Each stem is surmounted by a large flower, which, whether in the double or single kind, is especially beautiful in bud. It forms a globe of dark crimson, surrounded by the beautifully cut foliage, and is quite as handsome in this state as when the flower is open. The single flowers, about three inches across, have, usu-

FINE-LEAVED PÆONY.—(*Pæonia tenuifolia.*)

ally, eight petals, of a rich purplish-red, against which the numerous yellow anthers show in strong contrast. In the doubled-flowered form the center is filled with small crimped petals, and present a mass of brilliant color. This is one of the old-fashioned plants, that have altogether too much merit to be allowed to disappear from cultivation. Those who, like ourselves, are old-fashioned in their garden notions, and like to look, each spring, for our favorites in the same spot, where they have greeted us in former springs, and like to see them return each year with no other change than renewed strength and vigor, will be glad to add the Fine-leaved Pæony to their collection. It comes every May with its abundance of beautiful foliage, then appear the buds so attractive, that we are almost sorry to see them open into flowers. It is a plant to be set in its place, and be let alone for years.

Green Peas—Half a Bushel a Day.

Is there anybody who does not enjoy well cooked green peas, fresh from the garden—a good many of them—and very often, too? They are a nourishing food, and healthful also, if well cooked, and not swallowed with the skin or seed-coat unbroken. They are one of the most certain, easily grown and earliest products of the garden, and can be had in succession most of the summer. When our family is large we always plan for "half-a-bushel a day" (in the pod) from some time in May, according to the season, up to the end of July, and often well into August. The ground producing them is used for a second crop—celery, or something else. Selecting as dry and warm a spot as can be allotted to them, and applying a fair quantity of well rotted yard-manure, we sow on the same day at least two varieties, in rows, as soon as the snow is gone and the ground can be worked without packing. A good assortment to start with is: a few "Improved Daniel O'Rourke's" for the earliest (they are bettered by a *little* sugar added in cooking); plenty of Alphas for the chief early crop, with more of them

sown 5 or 6 days later, or with "Laxton's Fill Basket," or "Little Gem," or "Advancer," sown at first, to come in after the Alpha; and Champion of England sown plentifully at first, and more sown every week or oftener, to keep up a constant succession. The Champion may be varied with the "British Queen," and "Vietches' Perfection," if desired. The "Tall Sugar" can be sown by those wishing peas to be eaten "pods and all."—Alphas and Champions, sown at first, and in succession, answer very well without other varieties. Sow at the earliest possible day, to have them ready to follow Asparagus, if you have it. If by starting too soon, the first leaves get nipped by frosts, they will send up more leaves and try it again. If killed outright, put in more seed. Get a good pile of brush all ready now. It can be re-used for the later crops. If brush is not available, firm stakes can be driven along each side of the rows, and two or more wires or even strong twine (tarred if possible) be stretched to hold up the vines—say 2 ft. high for the Alphas, and 3 ft. or more for the Champions.

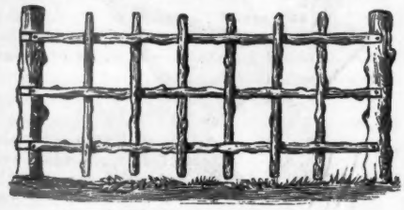
Salsify—Do You Grow It?

Salsify is often called "Oyster-plant." We wish it wasn't, for many who live far in-land do not like oysters, and the name prejudices these against one of the greatest delicacies of the garden. It is indeed a choice vegetable, but one within the reach of every one, as it requires no more care in cultivation than a parsnip. Its requirements are precisely those of the parsnip—a deep, rich soil and early sowing of *fresh* seed, the seed being quite uncertain if not of the growth of the previous season. Make the rows 15 inches apart and sow as soon as the soil is dry enough to work; the seed being long and narrow is not sown readily in a machine, and it is safer to sow by hand. The root is rarely over an inch through; to get the largest possible, thin to three or four inches and keep free of weeds.

Scorzonera, or "Black Salsify," is a related plant, grown in the same manner and for the same uses; the root has a darker exterior. By some the flavor of this is preferred—try both. Both are hardy, and if desired, a part of the crop may be left in the ground until spring, the winter's supply being stored like other roots. *Uses:* The roots are to be scraped and thrown into water at once, else they turn dark. They are cut into small pieces, stewed, and served with a sauce of butter thickened with flour; they are boiled whole until soft, then dipped into batter and fried, or are mashed after boiling, made into cakes which are dipped in batter and fried. They are also frequently used to make a soup, directions for which we will endeavor to give at the proper season in the "Household." It is surprising that so excellent a vegetable should be so little known, and are quite sure that those who try it for the first time will thank us for bringing it to notice, and will not be without it thereafter.

A Simple Rustic Fence.

Rustic fences are only appropriate when they are in keeping with the surroundings. A rustic fence does not comport with a house of elaborate architectural design, any more than an iron and stone



A SIMPLE RUSTIC FENCE.

fence would be in place in front of a log cabin. The fitness of things being observed, a rustic fence is often the best possible, and we have from time to time given illustrations of various styles. A correspondent who has been in the lead-mining regions of Missouri, sends us a sketch of a fence which he saw there, and which seemed to him especially appropriate. We reproduce his sketch in the engraving; as he drew it the fence posts were halved, and the rails let into the flat side, but thinking the rustic effect would be increased, they are represented here as round. Three poles with the bark on are let into mortices in the post and nailed firmly, and the palings, about the size of hoop-poles, are interwoven with the rails, to alternate, as shown in the engraving, no nailing being necessary.

The Star-Anemone.

Few genera of plants present a wider range in habit and in color than *Anemone*. Nothing can be more modest and graceful than our early "Wind-flower," *Anemone nemorosa*; it is among the first comers in Spring, and along the edges of woods and in sheltered places, hangs its pure white or purple-tinged flower, as if in doubt whether spring has really come. In marked contrast with this is the Scarlet Wind-flower (*Anemone fulgens*) of the gardens, one of the most flaunting and self-asserting of all early plants. In stature, we have these early species of a few inches high, and in autumn the tall Japanese species, reaching under culture the hight of three feet. In colors, there are the purest white, the most intense scarlet, the brightest yellow, the deepest sky-blue, and various intermediate shades of pinks and purples. Many of the culti-

STAR ANEMONE—(*Anemone stellata.*)

vated species remain single, while others, like the florist's Anemones, (*A. coronaria*), become remarkably double. It seems strange, that plants possessing so much beauty, and offering such a great variety, whether for the border or the rock work, should be so little known and so little cultivated. The majority of the species are perfectly hardy, and many of them bloom in early spring, at a time when brilliant flowers are quite scarce. In most of the species the foliage is handsomely divided, and adds not a little to the beauty of the plants. The engraving represents the Star-Anemone, *Anemone stellata*; this is not one of the earliest, as in the open ground it does not flower until May, but is one of the neatest. It forms a tuft of handsomely cut foliage, above which appear, on stems 6 or 8 inches high, the numerous flowers an inch or more across, and of various bright tints of rose, pink, and purple, each flower opening for several days in succession.

One Grape Vine.... Everybody.

Every family occupying a dwelling, in Country or Village, and nearly every City resident, can have and *should* have at least one Grape Vine growing, not only to "sit under," but to eat the fruit of. Wherever there is, within reach of some sunshine, a bit of ground a foot or two wide and three or more feet long, there a vine may be planted, and trained for a long distance, on a fence, up the dwelling, on a trellis, or up a post. Its abundant green foliage is always grateful to the eye, especially among city walls, and its clusters of cooling, pleasant fruit need no advocate. The grape vine is one of the most uncomplaining, unfastidious and care-rewarding of plants. Keep standing water away from its feet, give it something to eat to make stems, leaves and fruit of, with some sunlight for part of the day, and it will go to work and keep at it, as long as you live. No food suits it better than a lot of bones, coarsely or finely broken, or whole ones if there be enough of them, mixed in with the soil. It will fasten a net-work of roots or rootlets upon every bit of bone and extract nutriment as long as there is a particle of it left. All the training it will need you can give in a few minutes before breakfast or after tea, once or twice a month. It will *pay* in pleasure, in foliage, in fruit.

Order the vine soon; it can come or go anywhere, by mail; choose the place; as soon as the frost is well out of the ground, dig it up a foot or more deep; mix in the soil a peck or more of crushed bones for each vine; those from the butcher, broken up with a hammer or ax-head, will answer. When the vine arrives, expose its roots as little as possible to the air; make a hole, set it as deep as it grew before; spread its roots out well each way; cover them with earth, and moisten if needed. That's all, until you need to train its shooting stems. (Our columns have told and will tell how *that* is done.)—All the above is a very simple matter. Reader, if you have not done so, take our advice and plant, at least, ONE grape vine *this* spring—better two, three, a dozen of them, if you have ground; plant at least one, whether you live on Fifth Avenue, or in the "wilds of Oregon." You will thank us for the exhortation not very long hence.—The Concord variety, better than almost any other, will grow almost everywhere. The Delaware, Creveling, and Eumelan, are excellent among other good and reliable kinds.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Decorative Art.

BY M. G. E.

Decorative Art has been defined as the beautifying of useful things. But to the enthusiastic decorator, everything of pleasing effect has its use, if it be only to delight the eye. A piece of bright color, laid by childish hands against a bare and sombre wall, if it is in harmony with its surroundings, and relieves the monotony of a dull and cheerless surface, becomes at once a thing of use. Nothing that renders home attractive, or upon which the eye may fall with pleasure, is so small and mean as to be despised. While we counsel against the purchase of poor pictures, misshapen statuettes, and the thousand and one cheap ornaments (?), we would suggest the use of the saw, the chisel, the paint-brush and the needle. A panel painted by inexperienced fingers, however weakly, is preferable to the colored lithograph or poor chromo, and a carving but roughly done by hand, is infinitely more desirable than the veneered and highly glazed surface of the cheap wood-work. The home-made article will at least have the value of originality, and will show care and study, if not good taste. None need despair of some success, and while all may not be able to produce a work valuable for its artistic merits alone, yet each may so adorn and beautify some article of use that it may become as valuable for its ornamental qualities as for its usefulness. Above all, let it be noted that beauty does not depend upon costliness of material, but rather upon a harmonious combination of effects, and the adaptiveness of each article for the place assigned to it. Save every bright colored scrap that by bare possibility even may be of use; preserve bits of broken ornaments, old legs of chairs, if they are firm and solid, broken mouldings, and the time may come when you will need just such a piece as you now despise, and you will go gladly to your store-house to find it. First in importance in Decorative Art may be placed

Wood Carving,

and it is hoped that the simple rules and instructions given in these letters may prove of use to beginners, who will find that, as progress is made, observation and experience will be the best teachers.

We give here sketches of the two articles usually chosen by the inexperienced as most easy of construction, and requiring but little ornamentation, viz., the Wall-Pocket (fig. 1) and the Bracket (fig. 2).

The WALL-POCKET (fig. 1) is much the simpler and is very easily put together. Half-inch boards will

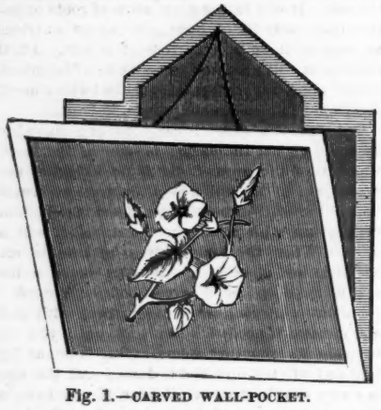


Fig. 1.—CARVED WALL-POCKET.

be required for these—a little heavier for the shelf of the bracket and its support—the wood chosen to be at the option or convenience of the worker. Black-walnut is always desirable, as being most easily worked and the most satisfactory when finished. Cherry is handsome—of a rich, deep red when oiled, but tough and hard to work, and apt to crumble under the tool. Oak should never be attempted by the inexperienced. For economy, pine or any other cheap wood may be used, and stained after carving, but this is not desirable when it can be avoided. Ebonized wood is, however, very effective when an incised pattern only is desired, the pattern to be marked off with gilt or touches of paint, and the effect will be greatly enhanced by a spray of flowers neatly painted upon the black back-ground. Full instructions in staining, ebonizing, and gilding, will be given later; with directions for making some simpler articles of furniture.

A bench to work upon will be found useful, and is easily made; but any old table or shelf of a suitable hight may be used. Upon this the material to be carved must be laid, in the most suitable position to get at the part to be worked, and kept

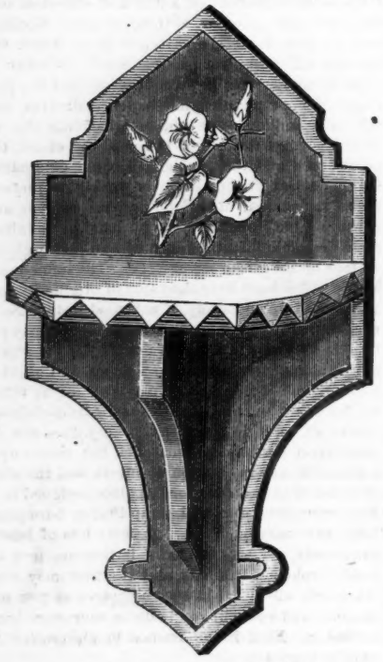


Fig. 2.—A CARVED BRACKET.

firmly in place by wooden blocks nailed tightly to the table, on each side of the piece, leaving the worker's hands free. After having drawn the pattern—those who can not draw may use tracing-paper—with the point of the carving-knife held straight down, you cut all around the edge of the pattern; then sloping the knife a little you cut around once again, thus removing a narrow slice of wood, which will leave the pattern quite distinct and clear, care being taken that the edges of the leaves are sharp, and that the sloping cut is taken from the back-ground and not from the pattern. All this may be done with a V chisel or dividing tool, but it is a dangerous instrument in the hands of the novice, and one slip may ruin all. The veining of the leaves is done with a little instrument called a veining tool, which must be handled carefully, as an unlucky slip will make a cut that can not be repaired. A line should be drawn all around the wall-pocket or bracket about ¼ inch from the edge, and cut away with the knife as above described, thus leaving a border or frame for the carved picture already made. Then with a stamping or fretting tool you roughen the back-ground, leaving the pattern smooth, and stamping carefully between the leaves and stems. This is a very simple process, and is done by holding the stamp in the left hand and striking it a quick blow with a mallet, the impression of the pattern on the underside of the stamping tool being left in the wood.

Fig. 3.—DESIGN FOR CARVING.

Fig. 4.—EDGE OF BRACKET.

The necessary tools required for this work are gouges of four different sizes, and as it will be

Fig. 5.—KNIFE.

found that the round bladed or U shaped gouge will be equally as necessary as the flat. It will be best to get four of each, and chisels, both straight and bent, with edges varying from the smallest procurable to an inch in width. A knife of the shape in the sketch (fig. 5) will be found an absolute necessity, and if not to be purchased elsewhere, will be sent by mail from the Cincinnati School of Design. An oil-stone is most suitable for repairing edges dulled by work, but a small fine grindstone should be kept at hand for the breaks that will occur; it must be used very carefully.

"Custard Fish" or "Fish Custard."

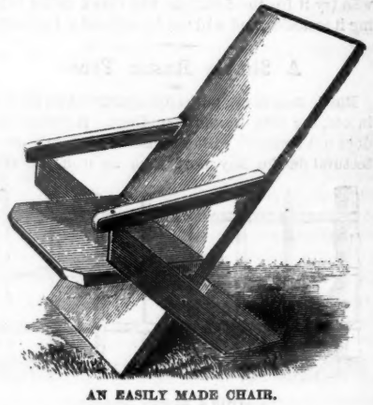
Names often go a great ways in deciding likes and dislikes. A Frenchman invited a friend to partake with him a "fricassee of boned robbins' legs." The friend pronounced it exquisite, and determined to introduce so delightful a dish at home. Imagine his disgust, his upheaval of—feeling, on happening to gather from a remark of a servant that he had just eaten a fricassee of *frogs'* legs. Recently, when breakfasting at a "boarding school," the young ladies were helped to a dish called "custard fish" or "fish custard," and they seemed to like it. Though a nice steak was offered us as a visitor, our curiosity prompted a request for some of the "custard fish." The first taste showed that it was our favorite preparation of salt codfish. There is in many families a decided repugnance to the use of codfish; it is considered plebeian, as only fit for those too poor to have anything better. Yet it is one of the most wholesome, nourishing foods, is economical, and if rightly prepared, is very palatable. It supplies excellent nutriment both for the brain and muscles. An eminent literary friend of ours used to say that, as his wife prepared it he wanted it "eight mornings in a week."—From the hurried manner of curing and drying codfish during large catches, it often happens that they are not uniformly salted and cured throughout. The smallest portion neglected may injure the taste of the whole fish and of others packed with it. This has had much to do with creating a dislike for this food. In purchasing codfish, it is well to examine them carefully, and select only those of uniform color throughout, and having no tainted odor at any point. Those of medium size are preferable—the smaller ones being too skinny, and the larger ones too coarse grained. There is now to be generally obtained what is called "bone-less codfish," at a slightly higher price, yet cheap as compared with meat or most other fish. From those well cured, the vertebra and chief bones, the skin and fins, are removed, and only the clear white portions are put up in boxes—a nice article ready for immediate use.—A great point in preparing codfish is to have it well soaked to remove all excess of salt, clear through. Two or three waters should be used. It is best to pick it finely, pour off one water, and let it stand in plenty of fresh water over night, or several hours. If too fresh, which is seldom the case, salt is easily added. This thorough soaking after it is picked fine, makes a marked difference in its flavor.

FOR "CUSTARD FISH," boil the soaked fish in water until tender; then pour off the water and pick it very fine; have ready a quart of hot milk for three-quarters of a pound of fish, and put into it the fish, and a tablespoonful of butter; stir until it boils; then stir in well a heaping tablespoonful of flour, and cook it five minutes. Let it cool a little, and then stir into it two well beaten eggs without further cooking.

FOR NICE FISH BALLS, soak the fish in warm but not boiling water for an hour, and repeat this twice; boiling water toughens it. Pour off the last water so as to leave it nearly dry, and chop it fine in a chopping bowl. Mash the boiled potatoes separately, and mix about one part of fish with two parts of potato, putting in about a tablespoonful of butter to a quart of the mixture, and adding salt if needed. Make into balls or cakes. This can be done the night before. Fry in lard or drippings, using only enough to keep them from sticking to the pan. Some prefer them fried swimming in lard, but they are less digestible. If the balls are first dipped in beaten egg, they will take up little of the cooking fat, and are very good. When well made thus, they are palatable, easily digested, and nutritious as well as economical.

An Easily made Country Chair.

It is curious to notice how different persons will hit upon the same device. Many years ago, a young surgical friend of ours had an operation to perform, which required a chair that would allow him to put his patient in a more or less reclining position. He did not wish to give up his patient, and could not afford to pay $50, more or less, for a regular operating chair. He applied to us in his dilemma, and at the expense of less than a dollar for lumber we made a chair, to the covering of



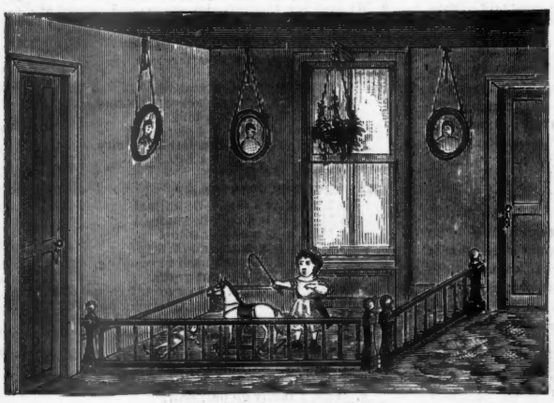
AN EASILY MADE CHAIR.

which he devoted his traveling shawl, and the thing was complete. There now comes from "G. W. A.," Lennox, Mass., a drawing of a chair, which embodies our first, and only attempt, at chair building; this is fixed—ours had the parts movable, was upon a wheeled platform, and so arranged, that it could be inclined in any needed position, but essentially the same chair. Our friend commends his chair

for use upon the lawn or in the barn. We give it as a useful and easily made chair—and very comfortable to use, but hardly to be advised for the lawn or barn. It is rarely that a chair is needed for the lawn proper, though one may be useful under the shade of a tree, and in that case, this is hardly "rustic" enough to be in keeping with the surroundings.—As to the desirability of a barn chair—we much doubt. It is quite too suggestive. We once knew a celebrated chemist, who never kept but one chair in his laboratory, and that was a stool. His plea was that a chemist never needed to sit down, except to make notes, and that no one else had any business in a laboratory. Something in the same line of reasoning, applies to chairs in barns, we don't think that those belonging there need to sit, and others have no reason for being there. Still, a chair of this kind will be found very useful. It makes an excellent chair for the piazza, vastly more comfortable than more costly ones made for the purpose. If there is a roomy kitchen, it will come in play there, or wherever about the place a chair is needed—but *not* in the barn. At the end of an attractive wood-walk, or at some point where a fine view is to be obtained, it is common to put a rustic seat. Rustic chairs are pleasing to look at, and are useful for almost every other purpose than as *seats*. Chairs of this kind, costing but little, and exceedingly comfortable, may be placed in such localities, and add much to the enjoyment of a landscape. The engraving shows the construction of the chair so plainly that no description is needed.

Baby's Play-House—Fencing in the Baby.

Mr. H. W. T., of Worcester Co., Mass., sends drawings of a Baby's Play-House that he has constructed, and writes very enthusiastically over its utility. The engraving will give an idea of the affair. A corner of the room is penned off by means of a light portable fence, to form an inclosure where the child can not get into mischief, and can amuse itself at will. The fence is made of two sections, their length being such as to allow them to be hooked to the door casings, while the two ends that form the corner are put together with loose butts. Mr. T. gives the following measurements: The top rail, 2 by 2½ in.; bottom rail, 2 by 2½ in.; corner posts, 2½ in. square before turning; balusters, (bought ready turned for 2 cts. each), 1 in. in diameter; hight of posts, 2 ft. 3 in.; hight of top rail from floor, 2 ft. The balusters are set into



VIEW OF BABY'S PLAY-HOUSE.

the rails at 4 inches from the centers. By unhooking the ends the two parts may be folded together and stored away; when it is necessary to sweep it may be readily moved as needed by unhooking one end. Mr. T. writes: "Should it prove to be of as much value to any of your readers as it has been to me, it will repay a ten years' subscription to your valuable paper. Baby is ready for the play-house as soon as he can creep, and for a year and a half afterwards, or until able to climb over the fence, the child will occupy the house very contentedly many hours in the day, and the mother can feel certain that it will not get burned or fall down stairs, or otherwise receive injury while she goes to another room or elsewhere. After he gets used to the situation he enjoys it. He can have his playthings here, and they will not get scattered. He can look out of the window, peep through the slats, or climb up and learn to walk by their aid."

Household Notes and Queries.

It may be well to say here to our new house-keeping readers that this column is theirs, where they can give "Notes" on such household matters as they would like to convey to other house-keepers, and where they can put "Queries" upon those matters in their household experience that they think others may answer helpfully.

A Grater for Potatoes, Etc.—"E. A. J." shows how a grater to prepare the potatoes for yeast may be made very easily. Place an oyster or fruit can upon the stove or near a fire, until the solder is melted; this will allow the top and bottom to be removed, and the seam to be opened. Open the large piece of tin, and with a nail punch numerous holes from the inside. A nail, which will make a ragged hole, is better than a regular punch; when punching lay the tin upon a block of rather hard wood; turn the edges, to give a place for tacks and fasten to a board as shown in the engraving. A hole may be made in the board to hang it by. We have used such a grater for horse-radish and other purposes, and it works admirably.

GRATER.

"Excelsior Potato Yeast," comes all the way from "towards sundown," as "E. A. J.," in Lane Co., Oregon, sends the recipe. "Pare three potatoes; grate them into a convenient vessel; pour on boiling water, stirring briskly until the mixture is of the thickness of starch. [Of course, starch made ready for use is intended. Ed.] Add one handful each of salt and sugar, and when cooled to 'milk-warm,' add one teacupful of brewer's, or other good yeast. Set in a warm place to raise. A small quantity of hops boiled in water and the liquor strained into the yeast adds to its quality."

A Nice Bread Pudding, and an economical one.—An excellent housekeeper, as we know, furnishes the following for the *American Agriculturist:* Any pieces of bread or toast, or both, may be used. Into a pudding dishful of these pour milk enough to fill the spaces, and let soak over night. Then for each pint of milk used, stir in one beaten egg, with a little ground cloves and nutmeg, and ½ teaspoonful of ground cinnamon for each 3 pints of milk. Bake slowly 1½ or 2 hours. This will give a stiff brown pudding resembling plum pudding. Currants or raisins may be added before baking, if desired, though it is very good without them, and many prefer it without. It is to be eaten cold, with cream and sugar, or flavored cream. If preferred, a hot sauce may be prepared with hot water, butter and sugar, slightly thickened with a little corn starch, and flavored with lemon or other extract.

Rye Bread.—"Mrs. B. A. R.," Matawan, N. J., disapproves of a recipe given some months ago, as that requires the hands to be put into the dough, which she thinks undesirable, as the mass is so sticky. She says: "I set a sponge over night, using milk warm from the cow, with rye-flour and yeast, the same as with wheat. In the morning when it is light, I stir in salt, flour, and more milk, using a stout iron spoon; put it in the tins and set in a warm place until nicely light, when it is baked." She uses no wheat flour, and says that the hired men prefer rye bread thus made to wheaten bread.

Why Do We Use Hops?—The remark about hops in another recipe shows that the writer, in common with many others, supposes that hops add to "the quality" of yeast, *i. e.*, improves its leavening property. This is a mistake. The only use of hops is to prevent the fermentation from going too far, and continuing until the mixture becomes sour. Other vegetable bitters are found to have the same effect when making yeast and beer. Indeed the use of hops in beer in England is comparatively recent—Ale-hoof and several other bitter herbs having been employed in brewing from early times.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

In answering some questions about the Center of Gravity, last month, I said that I would try to explain more in full what was meant by Gravity—but while the illustrations given last month are fresh in your minds, I wish to give a few more, showing how we are constantly observing some fact about the Center of Gravity. You will recollect that the center of gravity is that point in a body on every side of which the parts exactly balance one another. In a square board, it will be exactly in the center, and the method of finding this point in an irregular body was shown last month. A line drawn from the center of gravity directly to the earth, or to whatever a body rests upon, is called the *Line of Direction*, and that portion of a body upon which it rests, is its *base*. So long as the line of direction falls inside of the base, the body will stand firm. This may be illustated by a loaded wagon. The base of the wagon is that formed by the points where the wheels touch the ground. In fig. 1, *c* being the center of gravity, a line drawn from that strikes the ground midway between the wheels and the wagon stands firm. But suppose the same wagon be placed upon the side of a hill, or upon a much inclined road, as in fig. 2, the line drawn downwards from the center of gravity will strike ground outside of the wheels—that is, outside of the base, and the load must fall over. Without thinking of this rule—that the center of gravity must always fall within the base, we are constantly following it. In loading a wagon, the articles are placed in accordance with the law; in getting into a small boat, we don't stop to ask "is the line of direction within the base?" but we at once place ourselves in such a position that it shall be so. Indeed, we observe this law very early in life; in beginning to walk, this is one of the first lessons we learn—to so place our feet that the base will be broad enough to have the line of direction fall within it. If when older we stand with our feet close together, the base is very small and we may readily fall over; hence we turn out the toes in standing or walking, and place the feet far apart to make a broad base. If you stand with your heels close against the wall of a room, and try to pick up something from the floor in front of you, by stooping, you will find it impossible. In stooping, the *line of direction* of the body will soon fall outside of the *base*—your feet—and over you go. Were it not for the wall behind you, you could so stoop and arrange the body that its center of gravity would be directly above the base, and there would be no danger of falling. In carrying a load on one shoulder we lean in the opposite direction, without thinking why, but we really do it in order that the center of gravity shall fall within the base formed by our feet. So in carrying a load upon the shoulder, a bag of grain, for example, we place it, as in fig. 6, so that it will be equally divided, with as much in front as in the rear, when the center of gravity will be over the base, or the feet. If, instead of this, one should place the bag as in fig. 7, the center of gravity would be outside of the base, as shown by the dotted line of direction, and the carrier would have to stoop a great deal

Fig. 1. WAGON ON LEVEL AND INCLINED ROAD. Fig. 2.

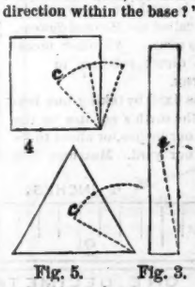


Fig. 5. Fig. 3. LINE OF DIRECTION.

Fig. 6. Fig. 7. CARRYING A LOAD.

to make it possible to carry it. We are all the time, without even thinking why, observing this law; we know that the broader the base and the lower the center of gravity, the firmer a thing will stand. Figure 3 has a narrow base, with the center of gravity, *c*, high; a little movement will bring the line of direction outside of the base and over it must go. In the cube, fig. 4, the centre of gravity is lower and the base broader, while in the pyramid, fig. 5, the base is still broader and the center of gravity lower yet, consequently a body of this shape is the most difficult of all to upset. The curved line in all of these three figures shows to which point the center of gravity in each must be moved in order that the line of direction shall fall outside of the base. A step-ladder like that in figure 8, while it stands well enough by itself, would be very unsafe with a man upon it, as it would raise the center of gravity and fall over easily. To make it safe, we have only to give it a broader base, as in fig. 9, in fact make a pyramid of it. These instances will show that we are constantly observing this important law—that the *line of direction*, a line drawn directly from the center of gravity, must always *fall within the base*, or that portion on which the body rests. The illustrations given here and several of those in last month's article, are from that excellent work by Mr. John J. Thomas, on Farm Implements and Machinery, which every intelligent boy and especially every boy upon a farm, might study with great benefit. This is all that we need say now about the *center* of gravity—at least until we have some talk about gravity in general. I am reminded that I did not, as intended, give you the figure of a metre, or rather a part of one. Many of you will recollect that some months ago, I had some articles

Fig. 9. GOOD AND BAD LADDER. Fig. 8.

ON WEIGHTS AND MEASURES AND THE METRICAL SYSTEM.

In one article I showed that our present measures and weights started from very small beginnings, grains of barley and of wheat, and that our measures of length and measures for liquids, and our weights had very little agreement, as every scholar who has tried to turn avoirdupois into Troy weight knows. I afterwards told something about the system of weights and measures adopted by the French, and used by several other countries, which is so plain and sensible that it must, before many years, be used by all civilized people. Even now it is so generally used in scientific books, that it is well for every one to know something about it. It is called the *Metrical System*, because its starting point is the metre. All other measures and all weights have a direct relation to

THE METRE.

It was told that the metre was fixed by taking one ten-millionth of the distance from the earth's equator to the pole. The *metre* is 39.37043 of our inches, or about three and a third inches longer than our yard. Measures less than a metre are obtained by dividing the metre, and those for more than a metre, by multiplying it. For these, prefixes from the Latin and Greek are used. For divisions, Latin, and for multiplication, Greek. Thus:

For division Latin prefixes.	Mille	= 1,000	For multiplication Greek prefixes.	Deca	= 10
	Centum	= 100		Hecaton	= 100
	Decem	= 10		Kilios	= 1.000
				Myrias	= 10,000

The divisions of a metre will stand thus:

Millimetre	$^1/_{1000}$ of a Metre.
Centimetre	$^1/_{100}$ " "
Decimetre	$^1/_{10}$ " "
METRE	1—
Decametre	10 Metres.
Hectometre	100 "
Kilometre	1,000 "
Myriametre	10,000 "

Now you may like to see what a metre looks like, but as our page is not long enough or wide enough, we must take a *decimetre*, which you will recollect is the tenth of a metre—or what is the same thing, 10 *centimetres* or 100 *millimetres*. These are put in contrast with four inches, so you can see the difference. Of course, paper is not permanent, it shrinks and expands, yet you can, by care, make a metre from the decimetre printed here that will be very nearly correct.

I have also told you how from the *metre* the measure of length, the measure for capacity was made. A cubic *decimetre* is a *litre*. That is a box that measures on the inside an exact decimetre each way, will hold just a *litre*—which is the starting point for measures of capacity of all kinds. There is not in this system a dry measure, a beer measure, and a wine measure, as with us, but the litre and its multiples and divisions answers for milk as well as for wheat. The other measures are derived from the *litre*, as the other measures of length are from the metre, and the same prefixes are used. Thus we have:

Millilitre	$^1/_{1000}$ of a Litre.
Centilitre	$^1/_{100}$ "
Decilitre	$^1/_{10}$ "
LITRE	1 Cubic Decimetre.
Decalitre	10 Litres.
Hectolitre	100 "
Kilolitre	1,000 "

As a metre is a little over one yard, so the litre is a little more than our wine-quart, or to be exact, it is 1,0565 quart. Now, having reviewed our lesson for the benefit of the new scholars, the older boys and girls will like to take a step in advance, so we will say that the metre is also the starting point for the weights of this system. From the metre we get the litre, and with the metre we get the weights. A cubic metre—that is, a vessel measuring a metre on all sides—filled with pure water, gives the *Tonneau*, or ton, of this system; but we will start with a smaller weight and the one most in use, the *Gramme*, which is the weight of a cubic centimetre of pure water. The *Gramme* is about 15½ of our grains. From the names of the divisions and multiples of the metre and the litre, you will have no difficulty of understanding the smaller and the larger weights. But we must talk of this another time.

THE DOCTOR.

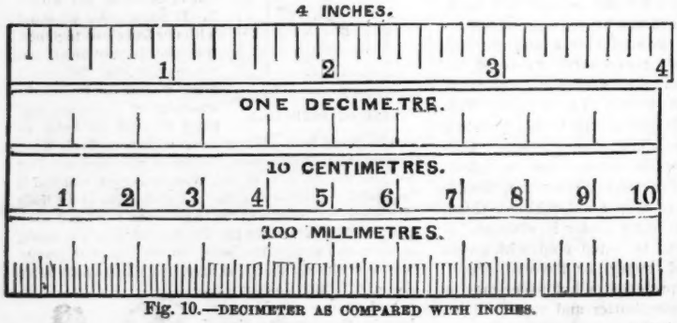


Fig. 10.—DECIMETER AS COMPARED WITH INCHES.

Strange Place for a Bird's Nest.—An English paper gives an account of a pair of birds—Pied Wagtails—that last year built their nest on the under side of a railroad car. This car made four short trips and returned each day, yet the birds not only built their nest, but hatched their young. The account states that if the car went off while both old birds were out hunting for food, these did not seem to mind it, but they would perch on the telegraph wires with the food in their beaks, and wait patiently until their traveling nest came back. The birds seemed to like the arrangement so well, that they came back to the same place this year, built another nest, and eggs were laid in it.

Our Puzzle-Box.

EQUIVOCAL WORDS.

(Each line gives different definitions to one word—*e. g.*, "Tranquility—repose—to shift a little—"*ease*.")

1. Explanation—regard—recital.
2. Once more—the rear—to aid.
3. To confine—a hut—an apartment.
4. Presence—sight—mode of regard—shamelessness.
5. An embrace—possession—to catch.
6. Fixed—rushing—dissipated—established.
7. To inculcate—print—emblem.
8. A vessel—to contend—to agitate.

TRY AGAIN.

PUZZLE.

Take part of Nevada, part of Maine, part of Georgia, part of Wisconsin, and part of California, and make another State.

J. W. WHEATLEY.

Pictorial Puzzle.—No. 466.—AUNT SUE sends this, as a very neat pen-drawing, and says "One word describes the central picture. From that word may be made, one at a time, the twelve words which are represented by the pictures surrounding the central one."

HISTORICAL ACROSTIC.

1. A celebrated revolutionary battle-ground.
2. One of the Presidents of the United States.
3. A British war-sloop captured by the Essex in the war of 1812.
4. One of the first Governors of Massachusetts.
5. A famous pirate.
6. A great Statesman.
7. A traitor to his country.
8. The name of the American vessel which captured the British sloop "Frolic."
9. An Artic hero.

The initials of the answers to the above questions form the name of a celebrated Indian Chief. MARION.

VERBAL DISTINCTIONS.

(Fill the blanks in each sentence with words pronounced alike but spelled differently.)

1. That good metal — much to the value of the —.
2. Was the roof of the — built in the form of an —?
3. He — to me from the fourth story that he was growing—.
4. The child — the — paper away.
5. What can — this —? It is horrid!
6. I shall visit — — I leave Scotland.

CHARADES.

1. My first and second may generally be found on the breakfast table: my whole in the fields.
2. My first is a kind of gum, my second is used at dinner-time: my whole is used on the farm.

NUMERICAL ENIGMAS.

1. I am composed of 25 letters:
   My 3, 22, 7, 20, 14, is a fruit.
   My 5, 15, 19, 11, 24, is a plant.
   My 7, 9, 18, 8, 1, is a blacksmith's tool.
   My 14, 12, 6, 1, 16, is a bird.
   My 18, 24, 9, 21, 10, is a planet.
   My 20, 17, 22, 2, 23, is a European city.
   My 25, 4, 12, 22, 13, is a fish.
   My whole is a proverb. ISOLA.
2. I am a word of 13 letters:
   My 2, 12, 3. is a domestic animal.
   My 11, 4, 10, is a cooking utensil.
   My 11, 6, 2, is a soft cushion.
   My 7, 4, 3, 1, 5, is a kind of drink.
   My 8, 4, 5, 2, is much used in cooking.
   My 5, 13, 9, 11, is to cut grain.
   My 3, 4, 7, 8, 12, 11, is to run with leaps or bounds.
   My whole was a famous American poet and author.
   J. W. WHEATLEY.

HIDDEN COINS.

1. The arms of that doll are too long.
2. It will be no trouble to shorten them.
3. Frances, why don't you come and see me?
4. Well, I rarely go out, now.
5. Have you heard from Arkansas lately?
6. Not a solitary line have I had for months.
7. Oh! gentlemen, do sing me a glee!
8. What! in this dim entry?
9. There goes my English friend, Rogers.
10. Do you mean that hale, ruddy giant?
11. Yes, he is my friend—at least I hope so!

METAGRAM.

In a word of one syllable, embodying six letters, find 2 articles, 2 exclamations, 25 nouns, 9 verbs, 2 adjectives, 2 pronouns and a preposition.

BLANK DECAPITATIONS.

(Behead the word which fills the first blank, and use the remainder for the second blank—*e. g.*, He did not —— in his determination to —— his will.—Falter, alter.)

1. She was sure to —— when she heard the wagons ——.
2. Under the —— of his boat, he saw an ——.
3. When told that he might have a holiday, he was a very —— little ——.
4. The —— was too damp for them to —— to advantage.
5. The cabbages —— in a ——.
6. Do not —— my ——, or you will annoy her.

CROSS-WORD.

My first is in shower but not in rain,
My next is in grief but not in pain,
My third is in heaven but not in sky,
My fourth is in leap but not in fly,
My fifth is in paint but not in draw,
My sixth is in chin but not in jaw,
My seventh is in girl but not in lass,
My eighth is in window but not in glass,
My ninth is in pity but not in love,
My tenth is in eagle but not in dove,
My eleventh is in claw but not in wing,
My twelfth is in hoop but not in ring,
My thirteenth is in wasp but not in bee:
My whole is a pretty, well-known tree.

ANAGRAMS.

1. Riot airing.
2. Best coals.
3. Is his tin dug?
4. See mine.
5. Does Ed try?
6. I clip a lot.
7. O! sing verse.
8. Far?—Steward.
9. Avert attic.
10. Bears on ale.

DROP LETTER PUZZLE.

(Every other letter of each word is dropped, commencing with the first letter.)

1. —p—l—h—n—s—.
2. —l—e—n—e—t—d.
3. —a—r—l—g—o—s.
4. —m—o—t—n—e.
5. —n—b—l—t—d.
6. —e—l—l—t—r—.
7. —e—d—e—o—e.
8. —o—r—s—o—d—n—.

PI.

Hewn lai het standblemshir fo file rea geno, Het dawroc snakes ot hated, het verba vile no.

ANSWERS TO PUZZLES IN THE FEBRUARY NUMBER.

CLASSICAL DOUBLE ACROSTIC.

Diogenes—Socrates.

D—emodocu—S
I— n —O
O— lympi —C
G— l —R
E— urop —A
N— igh —T
E— urydic —E
S— esostri —S

HIDDEN RIVERS.—1. Red. 2. Green. 3. Gila. 4. Ohio. 5. North. 6. East.

NUMERICAL ENIGMAS.—1. Snowflake. 2. Search the Scriptures.

MALANGE. — Pearl, earl, pear, peal, Lear, reap, pare, leap, pale, plea, lea, ear, rap, ale, pea.

STAR PUZZLE.—Deer, room, moor, reed, door, raps, spot, trap, pool, loof, plow, ward; (which read backwards will be) draw, wolf, fool, loop, part, tops, spar, rood, deer, room, moor, reed.

ANAGRAMS.—1. Mignonnette. 2. Affectionate. 3. Reminiscences. 4. Contrabands. 5. Necromancers. 6. Ascertains. 7. Chiropodist. 8. Literature. 9. Atmosphere. 10. Chalybeate.

CROSS-WORD.—Maine.

PICTORIAL ANAGRAM PUZZLE.—The pictures represent "storm," "ait" (a little island), "violet," "Eden," and "note," the letters of which, transposed, will make the proverb—"It is never too late to mend."

Puzzles, answers, and such matters as were formerly directed to "Aunt Sue," may hereafter be sent to "The Doctor," No. 245 Broadway, New York.

The Doctor's Correspondence.

THE HISTORY OF THE HOUSE-FLY.

During the past three or four years several young people have asked me to tell them about the common House Fly, how and where it breeds, and its history before it appears as a fly. One would suppose that there could be no difficulty in learning all that one would wish to know about this, the most familiar of insects, and that the scientific books would give the whole story. I was greatly surprised to find that our entomologists, who have studied the rare insects, and given the fullest descriptions of those that are hardly known outside of their cabinets, and which do not have, so far as we are aware, any relations to us through our crops or otherwise,

KNOW ALMOST NOTHING ABOUT THE HOUSE-FLY—

the insect of all insects that is with us daily throughout a large share of the year, which reminds us not only daily, but nightly, of its presence, and for the shutting out and trapping of which much ingenuity and large sums of money are expended every year. When the request to say something about the House Fly first came, I turned to the latest and fullest work upon insects, by one of our most learned students of the science, expecting to find here all the needed facts. What was my surprise to read: "Every one notices that house-flies are most abundant around barns in August and September, and it is in the ordure of stables that the early stages of this insect are passed. No one has traced the transformations of this fly in this country, but we copy * * the rather rude figures * * of the *Musca domestica* of Europe, which is supposed to be our species." Entomologists are strange people; they don't appear to know whether our commonest insect is different from a similar one in Europe, and are not sure of how or where it breeds!!!

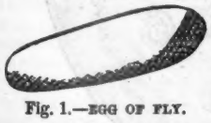


Fig. 1.—EGG OF FLY.

If those who devote their lives to the study of insects know nothing about flies, I couldn't be expected to give you any help, and so let the matter rest. A few days ago I came across, in the English "Science Gossip," an article showing that two Englishmen had been studying

THE EGGS OF THE EUROPEAN HOUSE FLY,

and if, as our entomologists suppose—but do not seem to have decided the fact—our fly is the same as theirs, we can learn something of its early stages. Flies do not always deposit their eggs in manure, as one of the observers found his upon a piece of cold meat, and the other obtained his eggs by placing a piece of liver where the House Fly could deposit her eggs upon it. The shape of the egg is shown in fig. 1, which is much magnified, its real diameter being $^1/_{30}$th of an inch; the surface, highly magnified, was found to be lined as shown in a part of the engraving. The eggs hatched in 2 or 3 days, and

Fig. 2.—CHRYSALIS.

THE MAGGOT, OR LARVA,

was produced; this, shown in fig. 2, was $^1/_{25}$th of an inch in diameter, and its skin sufficiently transparent to allow the interior parts, its breathing organs, etc., to be seen under the microscope. The maggots were so greedy and ate away at the putrid liver in such a lively manner, that the mass was in constant motion. When the *maggots* have made their growth, the time being governed by the weather, they become quiet and form a chrysalis (fig. 3), about $^1/_{40}$th of an inch through, from which the perfect fly soon appears, the time from laying of the egg to the appearance of the fly, being from 8 to 14 days. Now you have all the early history of the English House Fly I can find, and some of you should watch the ways of our own, to see how the two agree. Those who have the *American Agriculturist* Simple Microscope will find it useful in such examinations. Mind that there are several others besides the House fly, and that one of these, the Blow-fly, is much more likely to lay its eggs, or young maggots on meat than that...Now that spring has opened we may expect questions about insects; here is one

Fig. 3. MAGGOT OF FLY.

ABOUT RAISING BUTTERFLIES,

and I will let James, who lives at Williamsburgh, L. I., tell his own story:

"DEAR DOCTOR: A lady has sent me some chrysalides, asking me to take care of them for her, and to give her 'one or two of the butterflies when they come out.' I wrote and asked her if I was to bring them up on the bottle, and she answered 'yes,—a bottle of chloroform, as soon as the butterfly appears.' Now I really don't know what to do with them,—whether to shut them up in a jar, or box,—put them into a cold room or a warm one—and in my extremity I concluded to ask advice of you. Please tell me how best to take care of chrysalides so that I may secure the perfect butterflies with the least injury to their plumage, and oblige JAMES F. W."

Those who wish to have the best and most perfect specimens of butterflies and moths, gather the cocoons or chrysalides of those which pass their pupa state above ground and hatch them in the house, and so soon as the insect is ready to fly it is made into a "specimen" before it has a chance to injure its wings and become battered by storms and otherwise defaced. I would advise James to place the chrysalides under a coarse sieve, or in a shallow box covered with mosquito netting, or other coarse fabric, and place them in a moderately warm room where they can be looked at every day. When a butterfly or moth first comes out of its case it is usually a

POOR, HELPLESS, LIMP THING,

often wet and bedraggled, and a very unpromising creature. Let it alone. In time it will unfold its wings, stretch them into shape, and dry them, when they will show their proper colors and real beauty. It often takes several hours to get ready to fly. If it is to be made into a specimen, it should be killed just when it is ready to fly, and the easiest way to do this, and one that causes the insect no pain, is to put a few drops of chloroform upon its body. This usually kills small insects at once; the larger ones, after having the chloroform, should be put under a tumbler or other glass, or shut in a tight tin box, so that the vapors of the chloroform will be confined. Some of the large moths will not be killed by chloroform; for these, entomologists use a solution of one dram of Cyanide of Potassium in an ounce of water. A large needle wetted with this and thrust into the insect, usually kills at once.

Fig. 4.—SETTING A BUTTERFLY.

Fig. 5.—SETTING-BOARD FOR A LARGE MOTH.

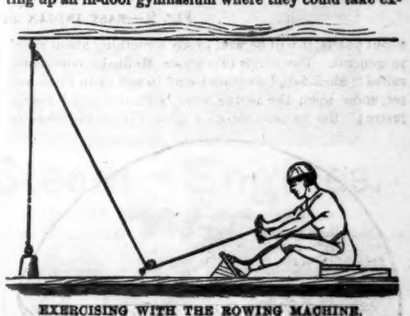
This is so deadly poisonous that I do not advise its use by youngsters—and as I do not know whether James is old enough to be trusted with so dangerous stuff, I mention it as one of the things for him to carefully let alone if he is a mere boy. Having killed the insect, if it is to

MAKE A SPECIMEN

it must be carefully dried. Some merely have a long pin thrust through the chest of the insect—that part to which the wings are attached—and its wings put in shape, as shown in fig. 4. If it is a moth with a large body, a grooved board, like that in fig. 5, or a board with two strips, tacked on to leave a space between them, is used. Where the moths have very large fat bodies, they are cut open below with a pair of fine scissors, the contents removed, and the cavity filled with cotton, made into a roll of the proper size; this cotton is covered with powdered arsenic, put into the body, and that is closed with a few stitches. But as these operations of stuffing, etc., require much skill, it is not likely that the lady who left the chrysalides with James will expect any such care from him.

A Rowing Machine.

Sometimes we have had inquiries from boys about fitting up an in-door gymnasium where they could take exercise in stormy weather. The Captain of a Boat Club in Penn. sends us a sketch of a rowing machine that has been put up in his boat house, and which is much liked by the members. This strikes us as a capital thing for a boy's gymnasium, as it costs very little, can be easily made lighter or heavier, and gives just the kind of exercise that is obtained in the use of the oar. It will be seen from the engraving that it only requires two pullies, a cord, and a handle, with a weight suspended as there shown. Those who are practising to pull in a boat prefer such a sliding seat as is used in rowing shells, but those who exercise for the sake of exercise, do not need this. The weight is to be graduated according to the strength of the person; from 30 to 40 lbs. is used by the members of the boat club—but boys will need much less. The weight should be so small at first as not to be fatiguing, and may be gradually increased. Pulling at weights has long been a favorite gymnasium exercise, but we have not before seen the weights arranged, as above described, to give an exercise similar to rowing.



EXERCISING WITH THE ROWING MACHINE.

A Curious Question, not new, but quite puzzling to those who have not seen it: "How can two persons be born at the same moment, and both die at the same instant, and yet one have seen, in fact lived, twenty days more than the other? It can be so. Those who have not seen the answer may enjoy finding out—while we delay the answer until next month. Our young readers need not trouble themselves to send answers.

Pearls—What They Are and How Procured.

The valuable jewels—we can hardly call them gems—known as pearls, are simply a rather common substance, *pearl*, in a peculiar form. Therefore, before we talk about pearls, it will be well to say something about *pearl* in general. The shells of various Mollusks, commonly called "Shell-fish," whether found in salt or in fresh water, show upon the inside what is known as a "pearly lustre;" the surface shows a great variety of colors as

Fig. 1.—PEARL SHELL—"MOTHER OF PEARL."

the position of the shell is changed, and we see, in very delicate tints, all the colors of the rainbow. Sometimes the shell of the common oyster is slightly pearly, but only indistinctly so, while the shells of the *Unios* and other

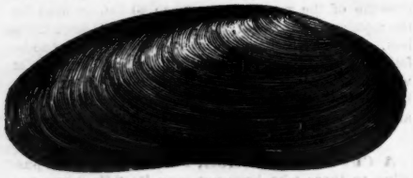


Fig. 3.—FRESH-WATER MUSSEL—*Unio.*

Mollusks, so common in fresh water streams and ponds, and commonly known as "Fresh Water Clams," or "Mussels," are often lined with the most beautiful pearl, and show brilliant colors. All shells are much alike—that is, they are limestone, and have much the same composition as common limestone and marble. The animal within the shell—the oyster, the snail, the fresh water clam, indeed all the Mollusks that have shells,

ALL BUILD THEIR OWN SHELLS.

Their shells are not something that comes to them from without, but they are built up *by the animal itself* from within. Many shells show by lines, on the outside, the rate of their yearly growth. You will at once wonder if all shells are essentially the same, why all shells are not pearly. This cannot be well described without going into matters that would hardly interest you, and I can only say in brief, that it is owing to the manner in which the material is put together. Rock candy, clear barley sugar, a lump of loaf-sugar, the grained appearance of peppermint drops, and the dead white of stick candy, are all very unlike in appearance, yet each is only pure sugar in a *different form*, in which the particles of sugar have a different effect upon light. Some of these Mollusks in forming their coverings, so deposit the carbonate of lime, to build up their shell, that this in those with the pearly lining

DECOMPOSES OR BREAKS UP THE LIGHT,

and shows the various colors of which white light is composed. You know that a crack in a lump of ice will show all the colors of the rainbow, and that a soap-bubble, when blown thin, will show the most beautiful colors; these common illustrations will allow you to understand how the minute particles of shell material, if put together in a certain way, may have a similar effect upon light. The difference then, between pearl and common shell, is, that it is so put together that the pearl breaks up white or common light into colored light. The animal in making its shell, whether pearly or not, takes great care that its interior, the case, or house in which its soft body is to live, shall be perfectly smooth and polished. We will suppose that by some accident, when the animal has its shell open and is taking in food, a grain of sand falls in, and gets between the soft body of the creature and its shell. The animal has no claws or other helps by which to get rid of this unwelcome guest to its house, and as it can not push it out, it covers over the grain of sand with its shell material, so that, its sharp corners being covered, it can get along with it as a round, smooth body, and as year after year it gives a new coat to the shell, it gives one to its troublesome visitor, and thus the grain of sand grows and becomes a pearl.

ALL PEARLS ORIGINATE

in this manner—an attempt of the Mollusk to cover up a grain of sand or other intruding substance that it can not get rid of, and as it covers it with the same material as that of which it builds its shell, it will be seen that only those Mollusks that have handsome pearly shells, will make handsome pearls. Pearls are very often found in the common oyster, but as the shell of that is nearly dead white, and very rarely pearly, so the pearls are dead white and of no beauty. It is in the Pearl-oyster, a large oyster-like Mollusk, the roundish shells of which are sometimes a foot across, that we find the most beautiful pearly lining, and consequently the most beautiful pearls, when accident causes them to be formed. This Pearl-oyster, as it is called, is not very closely related to our edible oyster; naturalists call it *Avicula margaritifera;* it is found in the East Indian seas, and in the Pacific Ocean, opposite Mexico and Central America. The shells, known as "Mother of Pearl," shown in fig. 1, are much used for making buttons and for a great variety of small ornamental work. The Pearl-shells and Pearls are obtained by

THE PEARL DIVERS.

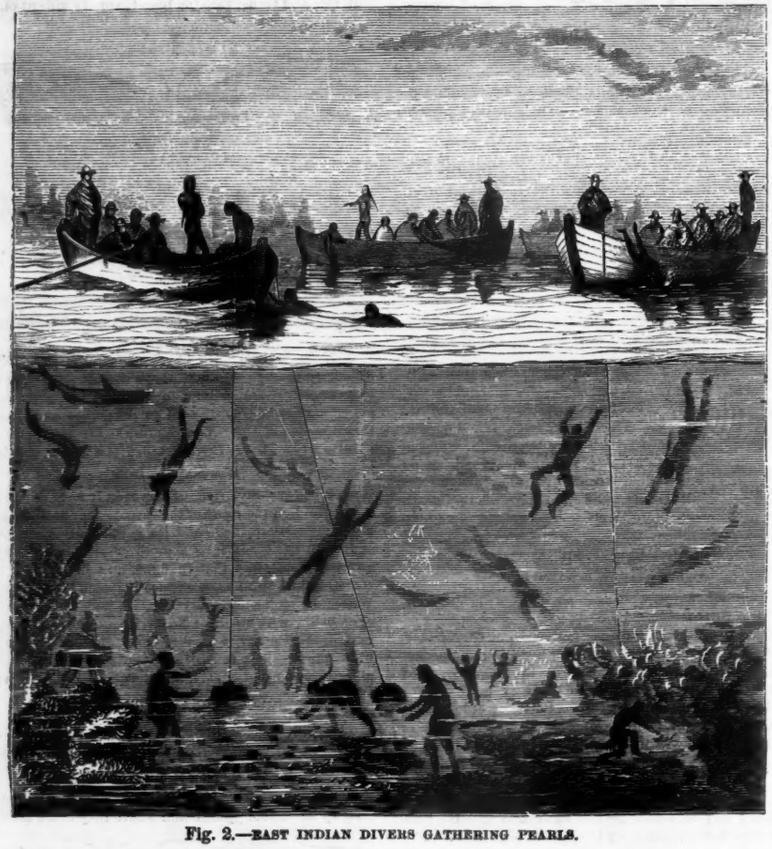


Fig. 2.—EAST INDIAN DIVERS GATHERING PEARLS.

In the countries where they abound, there are regular pearl fisheries. The "oysters" are found at a depth of from 50 to 100 feet, and the boats go out with 10 divers and men to manage the boat and haul up the divers. Each diver has a rope, at the end of which is a stone weighing about 30 pounds, it has a loop for him to put his foot in, and also a sort of basket to hold his oysters. The engraving, fig. 2, shows a pearl-fishing scene in the Persian Gulf. The men, when at the bottom, work as rapidly as possible in picking up the oysters, and placing them in the basket; the most experienced can stay below only 80 seconds, and the majority are down but 60 seconds, before they jerk the rope as a signal to be pulled up with their load. When the oysters are brought on shore, they are stacked up to die and decay, and as a consequence, a pearl-fishery is not a pleasant place. The best pearls are about the size of peas, but much larger ones are found. The largest pearl known, is two inches through.

PEARLS IN FRESH WATER.

As already stated, the shells of our *Unios* or "Fresh Water Clams," or "Mussels," as they are often called, have a beautifully pearly surface on the inside, and these sometimes produce pearls of great beauty. Fig. 3 shows the *Unio* in which pearls are most frequently found, of about half of the real size. Several years ago, the *Unios* in the New Jersey streams were remarkably productive of pearls, and there was a great excitement over them. Taking advantage of the fact that pearls are produced by gravel, or other matter within the shells of the Mollusk, various attempts have been made to produce pearls artificially. The Chinese are especially clever in

MAKING PEARLS AT WILL.

They keep the *Unios*, or fresh water clams, in tanks,

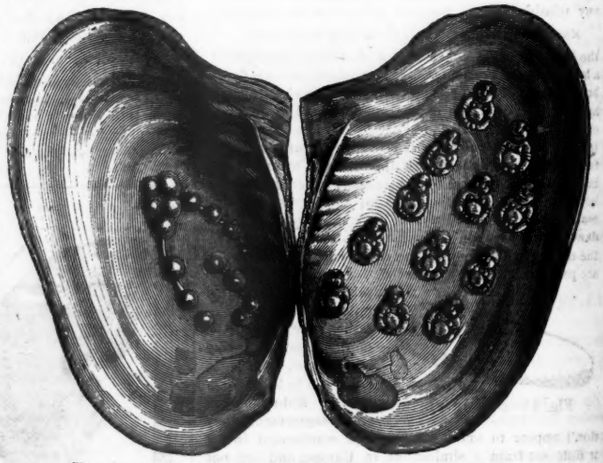


Fig. 4.—ARTIFICIAL PEARLS PRODUCED BY THE CHINESE.

where they can find them again, and dexterously slip in between the poor creature and its shell, either some little bits of pearl-shell, or small leaden shot; they sometimes put in tiny leaden images of Buddha, one of their many gods. These articles are in time covered with pearl, as shown in fig. 4, and the superstitious think it wonderful that the image of Buddha should appear upon the shell. Other attempts have been made to produce artificial pearls by boring through the shell and putting in sand, etc.

STATEMENT OF THE MUTUAL LIFE Insurance Company, OF NEW YORK.

F. S. WINSTON, President.

For the Year Ending Dec. 31st, 1878.

Net Assets, January 1st, 1878		$82,355,678 27
RECEIPTS FOR 1878.		
From Premiums	$13,092,719 83	
From Interest and Rents	4,752,407 74	$17,845,127 57
TOTAL		$100,200,805 84
DISBURSEMENTS FOR 1878.		
For Death and Endowment Claims (matured and discounted)	$6,603,713 22	
For Annuities	26,697 97	
For Dividends	3,555,462 00	
For Surrendered Policies and Additions	4,214,158 94	
For Contingent Guarantee Account	277,101 09	
For Commissions (payment of current and extinguishment of future)	532,496 63	
For Expenses and Taxes	817,099 57	$16,026,729 42
BALANCE JANUARY 1ST, 1879		$84,174,076 42
ASSETS, JANUARY 1ST, 1879.		
Bonds secured by Mortgages on Real Estate	$57,368,331 99	
United States and other Stocks, (cost value)	17,333,175 18	
Real Estate	6,319,051 73	
Cash in Banks and Trust Companies, at interest	3,100,516 10	
Balances due by Agents	53,001 42	
NET ASSETS, JANUARY 1ST, 1879		$84,174,076 42
Add		
Interest Accrued	$1,485,754 00	
Deferred Premiums	835,817 15	
Premiums in transit	129,272 58	
Market Value of Stocks in excess of cost	502,694 37	$2,953,538 10
Gross Assets, Jan. 1st, 1879		$87,127,614 52
Liabilities, Jan. 1st, 1879		83,878,235 80
SURPLUS & CONTING'T GUARANTEE FUND		$4,249,378 72
Number of Polices in force Jan'y 1, 1879		91,828
Sum Insured thereby		$290,774,315

NOTE.—If the New York Standard of four and a half per cent Interest be used, the surplus is **$11,395,553 30.**

From the Surplus, as appears in the Balance Sheet, a Dividend will be apportioned to each Policy which shall be in force at its anniversary in 1879.

By the unanimous action of the Board of Trustees, another important step in advance has been taken in the interest of all Policy-holders and the public, by directing that the premium rates on old and new Polices shall be reduced fifteen per cent from present tabular rates for Whole Life Annual Premium Polices, with a corresponding equitable reduction on the other forms.

The option is given to present members to accept this reduction in cash or to pay full rates on the old plan, and receive equitable additions of insurance payable with the policy; the reductions to be made on the anniversaries of the polices. All dividends are allotted in proportion to the actual contributions of each class to the surplus of the Company.

New York, February 19, 1879.

TEAS

We are now supplying all our customers with **Extra Choice Teas** at the very lowest wholesale price, **50c.** per pound. **Good Teas,** 30c., 35c. and 40c. per pound; and on Tea Orders of $5 and upwards,

All Express Charges Paid.

Our business connections with China and Japan, direct importations from the place of growth, long experience in the business, and special contracts with the Express Co.'s for reduced rates, place us before the public as the

Leading Tea House in the U. S.,

and the **PIONEERS IN REDUCING PRICES** and **KEEPING THEM DOWN.**

Don't give high prices, but send direct to the

OLD RELIABLE TEA HOUSE

(The Great American Tea Company),
and get your goods at

Greatly Reduced Prices.

Don't be deceived by other concerns who imitate our style and manner of doing business.

We urge all lovers of good Teas to give us a trial.

Special Inducements on Large Orders.

FULL PARTICULARS FREE.

THE GREAT AMERICAN TEA CO.,

Importers, 31 and 33 VESEY STREET,
P. O. Box 4,235. **NEW YORK.**
The Largest and Cheapest Tea House in the United States.

H.W. JOHNS' ASBESTOS Liquid Paints.

These are the purest, finest, richest and most durable paints ever made for structural purpose. They are prepared ready for the brush in sixteen newest shades and standard colors, suitable for the tasteful decoration of dwellings and all classes of buildings, inside and out, and for all purposes where a perfect protective coating is required, and, covering body and durability considered, *they are twenty-five per cent cheaper than the best White Lead or any other kind of paint now in use.*

☞ *Our Asbestos Liquid White has been adopted for interior and exterior work of the U. S. Capitol at Washington.* ☜

☞ *The Metropolitan Elevated R. R., of New York City, is painted with our paints.* ☜

ASBESTOS ROOF PAINT.—Brown and gray and cream, for tin and shingle roofs, iron work, agricultural implements, fences, outbuildings, etc. *We guarantee this to be a better article than has ever before been offered to the public for similar purposes.*

Special Prices to large consumers. Samples of Colors and Descriptive Price-Lists by Mail.

H. W. JOHNS' MF'G. CO.,
87 Maiden Lane, N. Y.

Manufacturers of **Asbestos Roofing, Boiler Coverings, Steam Packing, Sheathing, Cements, Coatings, etc.**

Improvement for 1879.
THE SAFETY HOT BLAST OIL STOVE.

☞ Does not heat the house. Perfect for all kinds of Cooking and Heating Irons. Always ready and reliable. The most satisfactory Stove made and the Cheapest. ☜ Send for circulars.

The Whitney Manuf'g Co.,
1123 CHESTNUT ST., PHILADELPHIA.

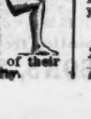
NORTH STAR SEEDS.

Minn. Early Amber Sugar Cane, St. Paul and North Star Tomatoes, and other specialties of Northern origin and growth. Remember "the further north seeds are grown, the sooner the product will come to maturity."

Ours is the most northern seed farm in America. Earliest sorts a specialty. Catalogue free.

HOLLISTER, CASTLE & CO., St. Paul, Minn.

Marks' Patent First Premiums. Artificial Limbs, with Rubber Hands and Feet. The most *Reliable, Comfortable,* and *Useful.* Illustrated Pamphlet of 112 pages, containing valuable information, sent *free* to those giving satisfactory description of their case. J. A. MARKS, 575 Broadway, New York City.



HOWARD & CO., New York.

Special Announcement in Relation to

WALTHAM WATCHES

No. B, Key-Winder,	$ 9 90	former price,	$13
" 3, " "	$12 70	" "	$18
" 7, " "	$16 90	" "	$20
" 8, " "	$21 80	" "	$25
" 10, " "	$29 90	" "	$33
No. B, Stem-Winder,	$13 70	former price,	$18
" 3, " "	$16 60	" "	$24
" 7, " "	$21 90	" "	$27
" 8, " "	$26 80	" "	$32
" 10, " "	$34 90	" "	$40

All are New Model Movements, in Solid Sterling Silver Cases (guaranteed), and the best finished Watches of these grades ever made by the American Watch Co. We have used the above numbers for years, and they are well known to our customers all over the country.

TERMS FOR THESE SPECIAL PRICES: **Money must be sent with the order;** Post-office Order is best and safest, next to that, Registered Letter. The Watch ordered will be sent at once, in perfect running order, safely packed to go any distance, and with two extra crystals. All charges will be pre-paid by us to any part of the Union, no matter how remote.

Price-lists with full particulars sent free to all who write for it.

We do not care to sell to the Trade, and make no discount whatever; if dealers wish to buy of us, they must remit the same amount as any one else. Address

HOWARD & CO., No. 264 5th Av. NEW YORK CITY.

We agree, as we always have, to refund the money for any Watch that does not give satisfaction.

ASK YOUR WATCHMAKER FOR A KEY THAT WILL WIND ANY WATCH AND NOT WEAR OUT.

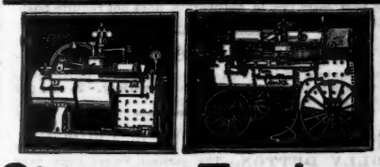
By mail 30c.—**AUTOMATIC** Eye Glass Holder, by mail 25c.—**Birch's Pat. Key Ring,** 10c.—Circulars free.
J. S. BIRCH & CO., 38 Dey St., N. Y.

THE Only Sensible Shoe for Children

Are those with the SILVER or

THE A.S.T.Co BLACK TIP UPON THEM.

THEY REDUCE SHOE BILLS ONE-HALF.



Steam - Engines.

FOR 1878 AND 1879.

More effective and more complete, and more readily adapted to the various mechanical and agricultural uses than any other in the market. Practical improvements accumulated from twenty years' manufacturing experience, with reputation maintained and success established.

Send for Circulars, descriptive, and containing testimonials concerning our **PORTABLE STATIONARY and AGRICULTURAL STEAM-ENGINES.**

WOOD, TABER & MORSE,
Eaton, Madison Co., N. Y.

RIDGE'S FOOD for INFANTS AND INVALIDS

Has received the most unqualified testimony from Physicians, Matrons and Mothers of the highest character and responsibility, in this and other countries.

THE EXTRAORDINARY SUCCESS

that this food has attained in this country (the sales of which aggregate as much as all other foods combined) is due to its intrinsic merit, containing as it does all the elements essential to growth and repair either in the infant or invalid. It has been demonstrated that multitudes of infants have been slowly starving at a period of infancy when development and growth are so remarkably active, because of inability of mothers to furnish the necessary nutriment on account of overtaxing the nervous system, and by prolonged lactation, thus lowering the standard of health in both.

RIDGE'S FOOD for INFANTS AND INVALIDS

Is no new, untried preparation, but has been in use for 30 years, and the price places it within the reach of all.

WOOLRICH & CO., on every label.

L. E. RANSOM, 34 MAIDEN LANE, N. Y. CITY
Importer of Annatto and Dairy Coloring.

136 pages beautifully illustrated, mailed to all applicants enclosing 10 cts. Regular customers free.

Bliss' Illustrated Amateur's Guide to the **Flower and Kitchen Garden**, with colored chromo; 216 pages, price **35 Cents.**

NEW SPRING WHEATS.

128 Bushels to the Acre.

791 lbs. Champlain, 528 lbs. Defiance,
Grown from a Single Pound of Seed.
Heads 5 to 7 inches long, 75 to 100 kernels per head.

CHAMPLAIN, a red, bearded variety—cross between the Black Sea and Golden Drop.

DEFIANCE, a white, bald variety—cross between the Club and a white California wheat.

Prices of each variety:—75 cts. per lb.; 3 lbs., $2, by mail, prepaid. At purchaser's expense: $5 per peck; $15 per bushel.

Our Wheat Circular, giving cultivation whereby the above yields were produced, reports of successful competitors for our $250 Premiums offered in 1878, and full of valuable information to all wheat growers, mailed to all applicants.

LOST NATION.—A new variety of spring wheat, highly esteemed in many localities. 3 lbs. by mail $1.00; $1.00 per peck; $3.50 per bushel.

WHITE RUSSIAN.—A variety of superior quality, recently introduced, highly recommended. 3 lbs. by mail $1.00; peck $1.00; bush. $2.75.

PEARL MILLET.

Clean Seed, 15 cts. oz., 40 cts. ¼ lb., $1.00 lb., 4 lbs. $3.50. Seed in chaff, 50 cts. pt., 80 cts. qt., by mail, post-paid. Prices to the trade will be given on application.

Prickley Comfrey Roots.

15 cts. oz., 40 cts. ¼ lb., $1.00 lb., by mail, post-paid, directions for cultivation accompanying each lot.

NEW DWARF EARLY PEA.

BLISS' AMERICAN WONDER.

The best early Pea in cultivation, does not require bushing, ¼ pt. pkts. 15 cts., pint 40 cts., qt. 75 cts., by mail.

EARLY LIMA BEAN.

A careful trial of this variety the past season proved it to be ten days earlier than the ordinary variety. 25 cts. per packet. Pint, $1.00, by mail, post-paid.

The Earliest Sweet Corn in Cultivation.

DOLLY DUTTON.—The earliest Sweet Corn ever introduced. A very dwarf growing sort, stalks from three to four feet high. Ears small, averaging from four to five inches in length, kernels of good size, tender, very sweet and delicious. It ripens from seven to ten days earlier than the Early Minnesota, and is of much better quality. Pkt., 10 cts.; pint, 40 cts.; quart, 70 cts.; select ears, 10 cts. each; $1.00 per doz., by mail, post-paid.

NEW EARLY FIELD CORN.

Queen of the Prairie.

A variety of Yellow Dent Corn which originated in one of our Western States, and has been carefully selected by the growers for several years, and has proved one of the earliest varieties of Field Corn in cultivation. It was planted, the last season, after the wheat crop had been harvested, and matured the crop perfectly. It was also planted on Long Island, July 4th, and fully matured the first of October.

Selected ears, 25 cts.; 3 lbs., by mail, post-paid, $1; shelled, $1.50 peck; $4 per bushel.

Blunt's White Prolific Corn.

Mr. Blunt, writing to the "Country Gentleman," says: The Improved White Prolific is the most satisfactory white variety I have ever raised. The average number of ears to the stalk is six good-sized ears, and fourteen the largest number on any one stalk. I selected 100 stalks that made a little over three bushels shelled corn." Our seed of this variety is very extra, having yielded from 80 to 100 bushels per acre the past season. Price per bush., $4.00; ½ bush., $2.50; peck, $1.50; ½ peck, $1.00; qt., 50 cents. By mail, pkt., 10 cents; 50 cents per lb.; 4 lbs., $1.50; selected ears, 25 cts.

Premium Chester Co. Mammoth or Golden Dent,

the largest, best, and one of the most profitable varieties for the main crop. Bush., $3.00; peck, $1.00; select ears, 75 cts. doz.; $5.00 per hundred. By mail, 3 lbs., $1.00—ears 25 cts. each.

Compton's Early Field.

Bush., $3.00; peck, $1.00; select ears, 75 cts. per doz.; $5.00 per hundred. By mail, 3 lbs., $1.00—ears 25 cts. each.

Persian Insect Powder Plant.

We have been very fortunate in securing a supply of the seed of this plant, from the blossoms of which the well known **"Persian Insect Powder"** is produced.—A packet of seed will supply enough of the material for the use of an ordinary size family for a year.—Directions for sowing the seed and preparing the Powder sent with each package. 25c. per pkt.; 5 pkts. $1.

LATE SNOWFLAKE.

New Varieties of Potatoes.

BLISS' TRIUMPH.—An extra early variety, ripening a week to ten days earlier than the Early Rose—and one of the most attractive in appearance. Superior quality and very productive.

TROPHY.—A new and exceedingly fine, medium early, red-skinned variety, resembling the Snowflake in appearance and quality. It might with propriety be called a Red-Skin Snowflake.

Price of each, 75c. per lb.; three lbs. $2.00, by mail postpaid. Peck $2.00; ½ bush., $3.00; bushel, $5.00; bbl., $12.00.

LATE SNOWFLAKE.—A sport of the Early Snowflake, and fully equal to that favorite variety in quality and appearance, ripening three weeks later, and much more productive. 60 cts. lb.; 2 lbs. $1.00, by mail; peck., $1.50; bush., $4.00; bbl., $8.00.

All the leading varieties of potatoes at market price.

The Great Centennial Exhibit.

500 Named Varieties Potatoes.

The largest collection in the world, for which was awarded the Grand Centennial PRIZE MEDAL and DIPLOMA,

One Tuber each of the entire collection, correctly labeled, and carefully packed, express or postage prepaid:
500 varieties, $100; 250 varieties, $50; 100 varieties, $25; 50 varieties, $15; 25 varieties, $8.

BLISS' ILLUSTRATED POTATO CATALOGUE, 48 pages, contains a descriptive list of all the new varieties recently introduced, with many other desirable sorts, beautifully illustrated. Centennial collection of 500 varieties. Also much useful information upon the cultivation of this valuable esculent. 10c.

Dioscorea Batatas—Chinese Yam.

One of the most valuable esculents in cultivation, though but little known; is quite hardy, remaining in the ground over winter without protection. They may be boiled or roasted, and when cooked possess a rice-like taste; are quite farinaceous, nutritive, and valuable for food. It is also a very desirable climbing plant, suitable for covering screens, doors, and unsightly places. It is sometimes called "Cinnamon Vine," on account of the peculiar odor of its blossoms. Small bulblets, in packets of one dozen, 20 cents; $1.50 per 100; 1 year-old roots, $1.25 per dozen; $6.00 per 100.

Kenney's Early Amber Sugar Cane.

In this variety we have a plant that is destined to prove of immense value to the northern portions of our country. Its saccharine qualities are of the first order, fine and rich, and its earliness highly recommend it to the whole country. When planted early in May, the seed almost invariably ripens, thus giving one the advantage of a double crop in one year, from one planting, some 20 or 25 bushels of seed, and 150 or more gallons of fine syrup per acre—900 lbs. sugar were produced from one acre in Minn. All kinds of farm stock are fond of the seed. We have samples of sugar in our office produced from this variety equal to the best coffee sugars in the market. By mail, 60 cents per lb. 3 lbs. $1.50. Prices for larger quantities upon application.

Collections of Flower Seeds by Mail.

The following collections contain the most showy varieties in our large assortment, with full directions for culture:

Collection A—Contains twenty choice varieties of Annuals..... $1 00
Collection B—Contains twenty choice varieties of Biennials and Perennials..... 1 00
Collection C—Contains ten extra varieties of Annuals and Perennials, embracing many of the new and choicest in cultivation..... 1 00
Collection D—Contains five very choice varieties, selected from *Prize Flowers*, of English Pansies, German, Carnation and Picotee Pinks, Verbenas, Truffaut's French Asters, Double Hollyhocks..... 1 00

Any one remitting $3 will receive the four collections postage free.

Collections of Kitchen-Garden Seeds by Mail.

The following Collections are made up in the most liberal manner, care being taken to give a sufficient quantity of all the finest varieties and most useful sorts of Vegetables required for a large or small Garden.

Assortment No. 5—Contains 60 varieties..... $3 50
Assortment No. 6—Contains 40 varieties..... 2 00
Assortment No. 7—Contains 20 varieties..... 1 00

Larger Collections, which can be safely sent by express (freight paid by purchaser) to any part of the country, as follows: No. 1, $20.00; No. 2, $15.00; No. 3, $10.00; No. 4, $5.00. For a list of the contents of each Collection, see **Guide to the Flower and Kitchen Garden.**

Gladiolus purpureo-auratus.

This is a new species from Natal, quite distinct from the common species of Gladiolus, and very attractive. On a slender, bending stem, which rises to the height of three or four feet, are borne from eight to twelve nodding flowers, somewhat bell-shaped in form, and yellow in color, with broad purple stripes on the lower divisions within. Now offered for the first time in this country. *25 cents each; $2.50 per doz.*

Bliss' Illustrated List of Novelties for 1879, mailed free to all. Address

P. O. Box 4129. B. K. BLISS & SONS, 34 Barclay St., New York.

A Valuable New Corn.

BLUNT'S WHITE PROLIFIC.

(Described in March No. *Am. Agriculturist*).

I offer selected seed of this notable field corn at the following prices.

By mail post-paid, ¼ lb. 25c., 1 lb. 75c., 3 lb. $2.00. By express or freight, 1 peck $3.00, 1 bushel $8.00.

PEARL MILLET.

(Introduced by me last year.)

Clean Seed (50 lbs. to the bushel), 30c. per ¼ lb.; $1.00 per lb., by mail, prepaid. Per peck, $7.50. Bushel, $25.00.

Descriptive lists of the above and other choice seeds free on application.

Wm. H. CARSON,
125 Chambers St., New York.

DREER'S GARDEN CALENDAR

FOR 1879 Revised and Enlarged.
NOW READY. Contains *Brief Directions for the Management of the Flower and Vegetable Garden and Greenhouse*; also, *Select Lists of Vegetable, Flower, and Grass Seeds, Bulbs, Plants, and every Garden Requisite.* Beautifully illustrated. Send two 3-cent stamps for postage.

HENRY A. DREER *Seedsman and Florist,* PHILADELPHIA, PA.

$1.00 SEEDS 25c.

Our 25c. Box of Seeds contains *Pearl Millet, Early Almond, Burpee's Beet, Acme Tomato, Mammoth Cabbage, Hanson Lettuce, Breakfast Radish, Marblehead Squash,* and *Russian Sunflower*; worth at retail $1, but costs, postpaid, only **25c.** We make this extraordinary offer to extend our trade. Directions for culture on each packet. **FLOWER SEEDS:** Our 25c. collections each contain 10 pkts. worth at least 75c. We give 5 boxes of Vegetable or 5 collections of Flower Seeds for **$1. Order now.** Stamps taken. **The Farm Annual** of Blooded Live-Stock, Improved Seeds, Fancy Poultry, etc., sent **free of charge** to any address. W. ATLEE BURPEE & CO., 221 Church St., Phila.

Cut this out. This Special Offer may not appear again.

SHAKER'S

Genuine Flower and Garden Seeds.

Address D. C. BRAINARD, Agt., Mt. Lebanon, Col. Co., N.Y.

Send three-cent Postage Stamp for Splendid Illustrated Catalogue and Amateur Guide to the Flower and Vegetable Garden for 1879, containing about two hundred illustrations, and two beautiful colored Plates.

Large Discount from former Prices.
"SPECIAL RATES TO GRANGERS."

PEARL MILLET

(THE NEW FODDER PLANT.)

Yields 100 tons green — 16 tons dry per acre.
60c. per pint (by mail, postpaid).
$1.00 " quart " "
By express, buyer to pay charges, $5 per peck.
Statement of our experiments with it, and instructions for culture, free on application.

PETER HENDERSON & CO.
35 CORTLANDT ST., NEW YORK.

SELECTED SEEDS, JUST IMPORTED.

MANGOLD WURZELS.

WEBB'S YELLOW INTERMEDIATE (New Selection).
" IMPROVED COLONEL NORTH YELLOW GLOBE.
" MAMMOTH LONG RED.
" NEW KINVER YELLOW GLOBE.
" YELLOW FLESHED TANKARD.
" RED GLOBE, excellent quality and very nutritious.
" LONG YELLOW, very select.

Also WEBB'S THOUSAND-HEADED KALE, or Cabbage.

Address, **WM. CROZIER,**
Northport, Long Island, N. Y.

RELIABLE SEEDS MEN.

—ESTABLISHED 1854.—

It will pay you to send and get our twenty-fourth annual Catalogue of Seeds, Plants, and Bulbs. ☞ We do not spend fabulous sums on fancy catalogues and style, but give our customers the benefit of *low prices.*

To those who desire it, will also send our **Wholesale Price List,** in which prices are given of seeds in quantity, and small dealers and large farmers can buy by this catalogue, and *save money.* Correspondence solicited and promptly answered. **ROBERT VEITCH & SON,**
IMPORTERS AND GROWERS. **New Haven, Conn.**

SEEDS, BULBS, PLANTS.

Superior quality, by mail post-paid, 4 Lilies, 4 beautiful sorts, including Double Tiger, 50 cts. 9 Gladiolus, 9 splendid sorts with name, 55 cts. 12 Double Tuberoses, fine flowering bulbs, 80 cts. Beautiful Illustrated Catalogue free to all. Send for one at once. All kinds of Flower and Vegetable Seeds at **Five Cents** per paper. New and rare Bulbs and Plants at extremely low prices.

JOHN LEWIS CHILDS, Queens, N. Y.

B.M. & Co's RELIABLE SEEDS
BECAUSE
ALWAYS FRESH & GENUINE

CUR SPECIALTIES FOR 1879.

Farmers' Fav. Corn, the best dent, 100 bus. per acre on light land, very early, makes finest meal and excellent fodder. lb., 50 cts., post-paid; peck, $1.25; bus. $3.50 **Imp. White Prolific Corn,** originated by Mr. Blunt, of Tenn., yields enormously very superior sort. lb., 50 cts., post-paid; peck, $1.50; bus., $4.00. **Pearl Millet,** extra clean heavy seed, pkt., 10c.; ¼ lb., 60c.; lb., $1.00; 3 lbs., $2.50, post-paid. **Champlain and Defiance Wheats,** ¼ lb., 40 cts.; lb., 75 cts.; 4 lbs., $2.50, post-paid. **Prickly Comfrey,** lb., $1; 3 lbs., $2.50, post-paid. **Chufas,** qt., 60 cts., post-paid. **Bay View Melon,** a new muskmelon, of delicious flavor, large size, wonderfully productive; pkt., 25 cts. **Surehead Cabbage,** always heads; pkt., 25 cts. **Amber Cream Sweet Corn,** a new very desirable sort; pkt., 25 cts. **The New Tomato, Red Chief,** pkt., 25 cts. **Acme,** the perfection Tomato, oz., 60 cts. Also,

The PHILADELPHIA BROADCAST

Seed Sower, for sowing all varieties Grain and Grass Seeds. No. 1 sows 12 to 15 acres per hour; No. 2 (hand), 4 to 6; at the same time sowing far better than **by any other method.** Our Illustrated Seed Catalogue for 1879 **mailed on application.** Send for it at once; **it costs nothing, and may save you a great deal.**

BENSON, MAULE & CO.,
223 CHURCH ST., PHILADELPHIA, PA.

SEEDS.

All the leading and most desirable kinds of

VEGETABLE, FIELD,
AND
FLOWER SEEDS.

Will be found in my new priced list. Mailed free.

ALFRED BRIDGEMAN,
876 BROADWAY, NEW YORK.

Shakers' Garden Seeds.

True and Genuine. Fresh and Reliable.

One of the oldest seed firms in the country. Seeds sent by mail Postage free. Special prices and terms to *Grangers.*

"The excellence of the Shakers' Garden Seeds is generally admitted."—*Ed.'s American Agriculturist.*

Illustrated and Descriptive Catalogue of Vegetable and Flower Seeds **Free.**

Address **CHARLES SIZER,**
Mount Lebanon, Col. Co., N. Y.

VERMONT SEED

EXPERIENCED PLANTERS ARE AWARE THAT NORTHERN GROWN SEED, WILL PRODUCE THE EARLIEST RESULTS. ILLUSTRATED CATALOGUE MAILED ON RECEIPT OF STAMP.

C.E. ALLEN,
FLORIST AND SEEDSMAN, BRATTLEBORO' VT.

TRY
ORANGE COUNTY SEED

Popular because **Reliable.** Send for Illustrated Catalogue of **Garden, Field,** and **Flower** Seeds. Seed **Potatoes a Specialty.**

CORNISH & GRIFFIN,
(Successors to HAWKINS & CORNISH, Goshen, N. Y.)
Newburgh, Orange Co., N. Y.

HEIKES NURSERIES

Are prepared to offer special inducements for the spring of 1879, on Apples, Crab Apples, Tetofsky, Haas, Pewaukee, Peaches, Cherries, Currants, and Gooseberries, Raspberries, Blackberries, and a general Nursery Stock.

We respectfully solicit correspondence.

The Heikes Nurseries Co., Dayton, O.

W. B. JONES'
BIRDSVILLE "SEED FARM,"
via Herndon P. O., Ga.,

Producer and Dealer in Southern Acclimated Field and Garden Seed, carefully selected, for sale. Pearl Millet and Seeds of other forage crops for sale. Drop a postal card for Circular and Price-List.

PRICKLEY COMFREY ROOTS.

¼ lb. 30c.; 1 lb., 75 cts., post-paid; 10 lbs. and upwards by express, 50 cents per lb. Full particulars sent.

G. A. WILCOX, Gasport, N. Y.

SUFFOLK CO. SEEDS, PLANTS, TREES, for 1879. Cold Frame Plants a specialty. True and Reliable. Low Price List free to all. WM. W. STERLING, Cutchogue, L. I., N. Y.

PEARL MILLET, 30 cts. ¼ lb.; 10 cts. a pkge. New Rose Aster, 6 cts.; New Japan Cockscomb, 6 cts. Catalogue free. **H. N. SMITH, So. Sudbury, Mass.**

NEW, RARE OR CHOICE.

To Farmers and Gardeners.—I offer the following NEW, RARE OR EXTRA CHOICE Vegetable Seed, postpage paid by me.

Marblehead Early Sweet Corn.—Decidedly the earliest of all varieties of sweet corn. Per package, 15 cts.

Egyptian Sweet Corn.—Decidedly the sweetest of all varieties of white sweet corn. Per package, 10 cents; per pound, 35 cents.

Marblehead Mammoth Sweet Corn.—The largest of all varieties, and the earliest of the extra large kinds. Per package, 15 cents; per pint, 35 cents.

Longfellow's Yellow Field Corn.—Kernels and ears, extra large, not suited to the South. Per package, 10 cents; per quart, 55 cents.

Early Amber Sugar Cane.—Samples of the sugar, and full instructions for cultivation and making of sugar, sent with each lot. Per quarter pound, 16 cents; per pound, 45 cents.

Bastian's Early Blood Turnip Beet.—The best of the earlies; a great acquisition. Per ounce, 12 cents; per pound, $1.25.

Hancock Early Peas.—The best cropper, and purest of all the extra early sorts. Per package, 10 cents, per quart, 60 cents.

Tailby's Cucumber.—Large, very handsome and very prolific. A prize for any garden. Per package, 15 cents; per ounce, 35 cents.

Marblehead Champion Pole Beans.—15 cents per package. *The earliest* of all varieties.

Kentucky Wonder Beans.—15 cents per package. Compared with scores of varieties, they have *proved the most* prolific.

Hutman Squash.—20 cts. per oz.; 10 cts. per package.

Marblehead Squash.—30 cents per oz.; 10 cents per package.

Hubbard Squash.—20 cents per ounce.

As the original introducer of these three splendid winter varieties, I offer seed grown specially for purity.

Cocoanut Squash.—10 cents per package; 30 cents per oz. Excellent in quality and an elegant ornament for the parlor. Very prolific.

Danver's Carrot.—$1.50 per pound; 15 cents per ounce. Forty tons have been raised to the acre.

Sill's Melon.—A canteloupe; sweet, spicy, delicious. Per ounce, 20 cents.

Vick's Early.—20 cents per ounce; 10 cents per package. The best of all the early Water Melons.

Excelsior Melon.—25 cents per oz.; 10 cents per package. Has been raised in Massachusetts to weigh 75 pounds. Quality excellent.

White Egg Turnip.—The new American turnip. Early, large, and of excellent quality. Per oz., 15 cents.

My Seed Catalogue, treating of all the above varieties in detail, and an immense collection of vegetable and Flower Seed, will be sent *free* to all who write for it.

J. J. H. GREGORY, Marblehead, Mass.

IMPROVED PROLIFIC WHITE
SEED CORN.

Selected and saved by myself, 4 to 10 ears on a stalk—70 to 161 bus. shelled corn per acre.

Price by mail, 50 cents per pint; 75 cents per quart; $2 per peck; $3 per two bus. by Express or freight. Remit by Reg. Letter. **A. S. BEEKMAN,**
South Branch, New Jersey.

LANE'S
Imperial Sugar-Beet Seed.

The best root to feed cows or young stock. 40 tons raised per acre. ¼ lb., 25 cts.; 1 lb., 75 cts. Postage added.

HENRY LANE, Cornwall, Vt.

GREENLEE CORN. 32-rowed, nothing new, tested for 50 years on one farm, large ears, matures early, highly productive. For full description and price list send postal with address to J. C. GREENLEE, Harland Farm, East Bethlehem, Wash. Co., Pa.

LANE'S Improved Sugar Beet is the best to raise for stock. Seed, ¼ lb., 25c.; lb., 75c. Also **Compton's** Field Corn; and a general list of Seed, and Potatoes; send for price list. DAVID R. WOOD, Morrisville, Vt.

ASPARAGUS—NEW VARIETY—SMALLY'S DEFIANCE. The merits I claim for the *Defiance*: it is early, a larger grass, softer, more tender, free from wood, the flavor sweet and very delicate; far superior to all other sorts, and will produce double that of the Colossal, and can cut it longer; also will continue to grow longer than other sorts. Address

A. SMALLY, Bound Brook, N. J.

The Albany Seed Store.

Price & Knickerbocker, Successors to

Established in 1831.

SPRING CATALOGUE—200 Illustrations. Mailed on receipt of six cents in stamps, to pay postage, which will be allowed on first order. **80 State St., Albany, N. Y.**

A NEW LETTUCE,
"EUREKA."

A new variety of our own production, which we offer for the first time to the public, and can confidently say it is the best Lettuce for family use ever introduced. Possessing more good qualities than any variety we have ever tried. The entire stock of this valuable introduction is in our hands. Give it a trial. **Price, 25 cts. per packet, or 5 packets for $1.**

Address, **CROSMAN BRO'S, Rochester, N. Y.**

N. B.—Our Seed Catalogue sent free on application.

ARTICHOKES

Red Brazilian and White French Varieties, cheapest hog food known. Send for Circular. E. F. BROCKWAY. Ainsworth, Iowa. Say you saw this in *Am. Agriculturist.*

Reliable SEEDS

Doura or Guinea Corn.

THE BEST ANNUAL FODDER PLANT.
25 cts. per 2 oz. packet.

PRICKLEY COMFREY,

The Best Perennial Fodder Plant.

Roots for sale, in large or small quantities. Per lb., post-paid, $1; per 10 lbs., $7.50; per 100 lbs., $60.

PEARL MILLET,

CHOICE CLEAN SEED, FREE FROM HUSK,
$1 per lb. by mail, post-paid.

Send for our Seed Catalogue, which is now ready for mailing. Address, **R. H. ALLEN & CO.,**
P. O. Box 376, N. Y. City.

New Varieties. **CHOICE SEEDS.** From Best of Stock.

CHOICE SEEDS.
Danver's Carrot, 1 lb., $1.15; five lbs. $1 per lb. by express. White Globe Onion Seed from very best of stock, 1 lb., $1.50; 5 lbs., $1.25 lb. Yellow Danver and Red Globe Onion Seed, $1 lb.; by mail, $1.15. A large stock of Bedding Plants. Price very low. Write for what you want, and get the best offer in the market.

E. B. JENNINGS,
Seedsman and Florist, Southport, Conn.

214 BUSHELS OF
CORN
TO ONE ACRE.

McCLURE'S PROLIFIC CORN produced 214 bushels to the acre, proof of which was given in October 15 issue of FARM AND FIRESIDE. I will send by mail, post-paid, sufficient seed of this famous corn to plant 10 square rods to any address, on receipt of 25 cents, or 5 packages to one address for $1. Every farmer should procure this wonderfully productive corn. **J. S. Crowell, Manager "Farm and Fireside," Springfield, Ohio.**

Potato Planter.

With it one man, with the aid of one horse, can

Plant Five Acres a Day,

viz., open the furrow, cut, drop, and cover the Seed and Fertilizer. **NASH & BRO., Manufacturers,**
7 College Place, N. Y.

—A K J—
As *introducer* of the new **White Egg Turnip,** offer the remainder of my 1878 crop of seed at reduced rates; also, White Prolific Field Corn, Pearl Millet, Mangolds, Farm Garden, Flower Seeds etc.
—P O—
My Annual Illustrated Catalogue for 1879 will be mailed to any address on application
—X Y Z—
Special inducements to dealers, Agricultural Societies, Farmers' Clubs, and others requiring large quantities.

GRAPE VINES.

Also **Trees, Small Fruits, &c. Wholesale rates very low** to Nurserymen, Dealers, and large Planters. Send stamp for Descriptive List. Price List **free.**

T. S. HUBBARD, Fredonia, N. Y.

NEW $60 PRIZE GRAPE.
MOORE'S EARLY,

A new, hardy Grape, combining the following desirable qualities: Hardiness, size, beauty, quality, earliness and productiveness.

Also, Small Fruits, Strawberries, Asparagus, etc. Send for Circular. JOHN B. MOORE, Concord, Mass.
Say where you saw this.

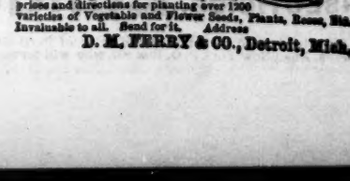
GRAPES

Prices lower than ever. Largest Assortment of old and new varieties. Plants of best Quality; at doz. rates free by Mail, and SMALL FRUITS. Send for Price List.

Address **BUSH & SON & MEISSNER,**
BUSHBERG, Jefferson Co., Mo.

FREE TO ALL

D. M. FERRY & CO'S
ILLUSTRATED DESCRIPTIVE AND PRICED
SEED ANNUAL for 1879



Will be mailed FREE to all applicants. It contains colored plate, 500 engravings, about 150 pages, and full descriptions, prices and directions for planting over 1200 varieties of Vegetable and Flower Seeds, Plants, Roses, Etc. Invaluable to all. Send for it. Address

D. M. FERRY & CO., Detroit, Mich.

LANDRETHS GARDEN SEEDS

Are the **PRODUCE OF OUR FARMS**, situated at

BRISTOL, Bucks Co., Pennsylvania. **BURLINGTON, Burlington Co., N. J.**
MANITOWOC, Manitowoc Co., Wis. **MONASKON, Lancaster Co., Va.**

The whole comprising a total of 1574 ACRES, owned, occupied and cultivated by ourselves. Upon these lands we have applied in a single season, $20,000 worth of purchased fertilizers, a fact which exhibits the magnitude of our operation.

THE STOCK SEEDS

From which all our crops are grown on all the farms, are produced on Bloomsdale, the Pennsylvania Farm, and under the daily scrutiny of the proprietors, are thoroughly culled of all departures from the true types, and produce crops of such purity of strain as to warrant us in declaring that NONE ARE SUPERIOR, AND FEW EQUAL!

Varied soils and climates, systems of cultivation, drying houses, steam machinery, implements and appurtenances generally, demonstrate our ability to produce large and varied stocks of seeds of the purest quality, at the very lowest price. All who desire good seeds, should purchase LANDRETHS'.

If your merchant does not keep them, write for them. ILLUSTRATED CATALOGUE FREE.

23 So. 6th St. **DAVID LANDRETH & SONS, Philadelphia.**

WE HAVE MADE

For the season of '79 a new combination of Garden tools; one so useful that every reader of the *American Agriculturist* who has a vegetable garden should own it. The four engravings show a portion of the combinations. As a Drill, it is capable of sowing the whole list of Garden Seeds, being furnished with an adjustable opening plow, patent dropping and covering devices, and a marker and roller. As a Double Wheel Hoe it has no equal; it hoes close and thoroughly the smallest plants; the hoes are reversible and exchangeable. As a Wheel Cultivator one can do as much with it as six with hand hoes. In addition to these useful combinations, the tool is provided with an elegant polished steel plow, an ever useful assistant in the Garden from early Spring till Fall. We know this combination to be the most valuable that has ever been offered to the Gardener. The price is but little more than that of an ordinary seed drill, yet the additional combinations are many times more useful than the drill alone; and we want every reader of the *Agriculturist* who has a garden to send for our full descriptive catalogue and testimonials and judge for himself. It is free to all.

S. L. ALLEN & CO., 229 Market St., Philadelphia, Pa.

The Monitor Seed Drill.

This is the most complete and positive Seed Drill ever invented. It is radically different from and superior to all others. It is the **only** machine which measures and drops the seed with a positive motion, and exactly the same amount at each foot or yard. It has been tested by 5 years' use in Massachusetts, and was awarded the highest prize at the "Centennial." ☞ The "Monitor" has been thoroughly tested during the season of 1878, and heartily endorsed **as a First Class Machine** by Professor Geo. Thurber, of New Jersey, and by Jas. Vick, of Rochester, N. Y.

☞ **Agents Wanted.**—For full descriptive circular and testimonials, address
THE MERRIMAC MACHINE CO., Newburyport, Mass.

Rue's Hand Cultivator & Seed Drill.

Send for circulars to GEO. W. RUE, Hamilton, Ohio.

"VICTOR" One-Horse WHEAT DRILLS,

(8 and 5 hoed)
for sowing Wheat, Rye, Barley, in fallow ground or in standing corn.

Force feed; simply constructed. The 8 ve hoed is adjustable for different widths, and is just what every small farmer ought to have, saving the price of a two horse drill. Manufactured only by

(Send for circulars.) EWALD OVEit, Indianapolis, Ind.

Pearce's Improved Cahoon Broadcast Seed Sower.

For Sowing all kinds of Grain and Grass Seed.

This machine does as much work as 5 men can do by hand, and does *better* work than can be done by any other means whatever. No more sowing too much to the left. Agents wanted in every county in the United States. Price $6. Send stamp for circular.

GOODELL COMPANY,
Antrim, N. H.,
SOLE MANUFACTURERS.

Holbrook's "VETO" SEED DRILL & "NEW" Hand Cultivator

sow and cultivate all kinds vegetables. Do work of 10 men. Best and cheapest. Price $12.50 combined.

$9.50 Boxed. $7.00 Steel Teeth.

Circulars Free. Made by E. E. LUMMUS & CO., Boston, Mass.

OSAGE ORANGE makes the cheapest fence. 200,000 extra plants for sale. 75 acres in thrifty nursery stock. Price List free. Address J. PERKINS, Moorestown, N. J.

MATTHEWS' SEED DRILL

The Standard of America.

Admitted by leading Seedsmen and Market Gardeners everywhere to be the most perfect and reliable drill in use. Send for circular. Manufactured only by

EVERETT & SMALL, Boston, Mass.

NELLIS' FLORAL INSTRUCTOR

An elegant illustrated quarterly devoted to gardening in all its branches, containing a complete list of Seeds, Plants, Bulbs, etc., at reduced prices, also much information. 10c. per year, sample copy and packet of New Japan Cockscomb Seed for 3c.

A. C. NELLIS,
Canajoharie, N. Y.

FLOWER SEEDS *at half price; choicest and best.* **5ct.** pkts. for **2½cts.**, **10ct.** pkts. for **5cts.**, etc. **VERBENAS—50** fine named sorts **50cts.** per dozen. **Catalogues free.**
D. C. McGRAW, Riverside Gardens, Binghamton, N. Y.

YOU

Can buy 100 Roses, Geraniums & Bedding Plants for $5.00
50 " " " " " 3.00
25 " " " " " 1.75
14 " or " or 7 of each (samples) " 1.10
20 Greenhouse & Bedding Plants " " 1.10

Sent by mail, safe arrival and satisfaction sure. Lists free. Order samples, and see. Address

TYRA MONTGOMERY, Mattoon, Ill.

FOR $1.00.

By Mail Post-paid. 24 Choice Plants & Bulbs, and 2 packets Flower Seed. 12 for 50 cts. Choice new varieties of Strawberry Plants given away, Vegetable Seeds, etc. Also high-class Poultry, Eggs, etc. Send for prices and particulars. Free to all. **ROB'T. LEWIS,** Hope Hill Garden (*Name Paper.*) **Castleton-on Hudson, N. Y.**

QUEEN OF THE MARKET

the largest, handsomest, best hardy Red Raspberry, three inches around, very productive, carries well, and sells best in market. **Sharpless and Crescent** Seedlings the best Strawberries. **Snyder, Wallace and Taylor** the hardiest and most prolific Blackberries; and other small Fruits. **Kaki,** the most delicious Japan fruit, as large and hardy as Apples. **Kieffer's Hybrid** Seedling Pear, blight-proof, good quality, bears early and abundantly. Send for Catalogues.

WM. PARRY, Cinnaminson, N. J.

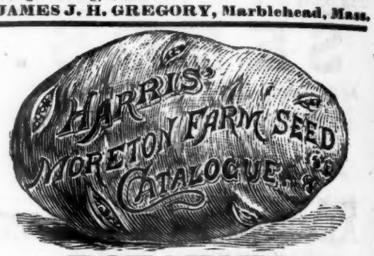
STRAWBERRIES, "Sharpless," "Cres-cent," "Duchesse," RASPBERRIES, "Pride," "Henrietta," "Reliance," "Gregg." GRAPEVINES, "Moore's Early," "Highland," "Lady." Prickly Comfrey. Compton's Corn, etc. Catalogue free. And many more.

D. E. HOXIE, Northampton, Mass.

Marblehead Mammoth Cabbage

There being a good deal of seed in the market raised from very poor stock, which must fail to give satisfaction, having been the original introducer of the Giant Cabbage, which when raised from the right strain of seed under proper cultivation, has been grown to weigh *over 60 pounds* to a single plant, and sixty tons to the acre, I now offer to the public seed that has been raised by myself, with peculiar care, all of it *from extra large, extra solid heads.* The Marblehead Mammoth is not only the largest, but is one of the most crisp and sweetest of all varieties of the cabbage family, as will be seen by extracts of letters to be found in my Seed Catalogue, where my customers state that they have raised cabbages from my seed that have weighed 40, 45, and 50 pounds each. Full instructions for cultivation sent with every parcel of seed. Seed per pound, $5.00; per ounce, 50 cts.; per ¼ ounce, 25 cts. My large Seed Catalogue sent *free* to all applicants. My very thorough treatise on Cabbage Raising, 30 cts.

JAMES J. H. GREGORY, Marblehead, Mass.



POTATOES,

Barley, Corn, Beans, Turnips, Mangel Wurzel, &c.

CHOICE VARIETIES OF

GARDEN AND FLOWER SEEDS,

With directions for cultivation. Sent free, pre-paid, by return mail, to any readers of the *American Agriculturist* who send me their address on a postal card.

JOSEPH HARRIS,
Moreton Farm, Rochester, N. Y.

SEED POTATOES,

A SPECIALTY.

STANDARD VARIETIES.—SELECTED STOCK. Also a large and choice lot of Seed Sweet Potatoes. Imported Early Pea Seed. All at lowest cash figures.

T. C. DAVENPORT, 124 Dock St., Phila., Pa.

SEED POTATOES.

All kinds. Low prices. Send for Price List.

H. W. Williams & Sons, Batavia, Ill.

THE BEST IN AMERICA! Mammoth Pearl Potato. $50.00 paid (after satisfactory proof) to any person having a potato possessing as many good qualities as this. See adv. in March No. Price, 50 eyes, 50cts.; 150 eyes, $1.00. J. A. EVERITT, Watsontown, Pa. Box 229.

Broom Corn Seed. Evergreen Improved. Extra fine brush. Good length and free from curl. Never gets red. 50 cts. quart by mail. SAMUEL WILSON, Mechanicsville, Bucks Co., Pa.

WHITE WATER LILY.—Strong roots of this fragrant Lily, with printed directions for planting in tubs and ponds, 25 cts. each, $2 per doz., by mail.

MANN BROS., Randolph, Mass. P. O. Box 162.

GLADIOLUS—First-Class Bulbs, from $15 per 1,000 upward. Tuberoses—fine double-flowering bulbs, $12 per 1,000. A retail catalogue of the above on application.

WM. H. MOON, *Morrisville, Pa.*

GREENWICH ACADEMY, with Musical Institute and Commercial College. A **SEA-SIDE** school. Founded 1802. On direct route from N. Y. to Boston. Students received any time. Catalogue free. Address REV. F. D. BLAKESLEE, A. M., Principal, East Greenwich, R. I.

POTATO AND COTTON BUGS.

THE NEW INSECTICIDE. **London Purple.** (Trade Mark.)

Superior to and **one-third** the price of Paris Green. Manufactured only by HEMINGWAY & CO., 60 Mark Lane, London, Eng., New York P. O. Box 990, who will forward address of nearest dealer from whom supply can be obtained.

CUTHBERT RASPBERRY.

See Illustration in March No. *Am. Agriculturist*, page 101. This variety promises to be the great market raspberry of the country, hardy thus far in winter, and the foliage endures without harm the hot sun. Grows vigorously everywhere, even on light sandy soils. Chas. Downing says: "I consider it the most promising *market* raspberry before the public, as far as yet tested. The fruit is large, very firm, and the plants, as I have seen them, are vigorous growers and exceedingly productive."

PRIDE OF THE HUDSON RASPBERRY.

The largest and most beautiful of Raspberries. Took the 1st Prize at Boston, but it belongs to the Antwerp class. Also the

GREGG and all the best new and standard varieties.—**SHARPLESS,** Crescent Seedling, Forest Rose, and all the other new and standard kinds of **Strawberries,** also **Currants, Grape Vines,** Gooseberries, Blackberries—pure, first-class plants. Prices very reasonable. Descriptive Catalogue free. Address **E. P. ROE,** Cornwall-on-Hudson, N.Y.

STRAWBERRY PLANTS.
100 Crescent Seedling.
100 Great American.
100 Cumberland Triumph.
100 Monarch of West.
100 Boyden's 30.
100 Wilson's Albany.

GRAPE-VINES.
15 Concord.
12 Hartford Pro.
8 Martha (White).

Either Kind, Post-Paid,

FOR $1.00.

Lapham & Anthony,
Clayton, Del.

Descriptive Catalogue **Free.**

THE DOLLAR NURSERY.

RASPBERRY PLANTS.
50 Brandywine (Red).
35 Delaware (Red).
25 Hirstine (Red).
50 Mammoth Cluster.
50 Doolittle's Imp.

BLACKBERRY PLANTS.
35 Kittatinny.
35 Wilson's Early.
35 Dorchester.
35 Lawton.

Strawberry PLANTS.

E. P. ROE Has a Superb Stock of the Coming New Strawberries,

Crescent Seedling, Forest Rose, Sharpless, Prouty's Seedling, Great American, and all the Standard Kinds.

The N. Y. Horticultural Society gave his Strawberries the 1st *Prize* in 1877; again the 1st *Prize*—a gold medal—in 1878. Also 1st *Prize* from Newburgh Bay Hort. Society, and 29 minor premiums from various Societies. The Massachusetts Hort. Society awarded him the 1st *Prize* in '78 for the largest and best collection of Raspberries. He has also the largest stock in the country of the two Great Raspberries,

CUTHBERT and PRIDE OF THE HUDSON

and all the leading varieties. His family list of small fruit plants is the best and most liberal ever offered.

$15 Worth of Plants for $5.

Descriptive catalogue free to all. Address,

E. P. ROE, Cornwall-on-Hudson, N. Y.

$1,000 WORTH OF

RASPBERRY PLANTS

GIVEN AWAY.

Strawberry, Blackberry, Currant, Grape, Gooseberry and Asparagus; 100 Varieties. Strong plants true to name. Extraordinary offer. Family Supply. 20 varieties $3. Circulars free. G. H. & J. H. HALE, So. Glastonbury, Conn.

Crescent Seedling Strawberries.

at bottom prices of any one advertising in this paper; Great American, $3.60 per 1,000. Miner's Great Prolific, $10 per 1,000; Raspberries, Blackberries, Currants, Gooseberries Fruit Trees, etc. Send for Catalogue, and see prices.

S. C. DE COU,
Moorestown, Burlington Co., N. J.

1,000,999 *Strawberry, Raspberry, Blackberry, Currant, Grape - Vines, Asparagus Roots, Peach - Trees.*

100 SELECTED VARIETIES.

Some prices page 117, last No. *Genuine stock. Quality best. Prices lowest.* Send for free Catalogue to

JOHN S. COLLINS, Moorestown, New Jersey.

GOOD CURE FOR HARD TIMES.

A PLANTATION OF EARLY PROLIFIC and RELIANCE RASPBERRIES.

100,000 Plants **FOR SALE**; *also* **200,000** *Cinderella* and *Continental Strawberry Plants.* Millions of other Plants, Trees, etc. Everything **new, novel,** and rare. *Prices low.* Send for *Descriptive Circular* to **GIBSON & BENNETT, Nurserymen and Fruit Growers,** Woodbury, N. J.

SHARPLESS' STRAWBERRY.

The Largest, Best Flavored, and Most productive. Berry grown with ordinary culture from 6 to 12¼ inches round. 40 page Catalogue of GREENHOUSE PLANTS & SMALL FRUITS free; with colored plate of Sharpless, 10c. Address [Mention this paper.] J. L. DILLON, Bloomsburg, Pa.

BEAUTIFUL FLORAL PLANTS BY MAIL.

STRICTLY FIRST CLASS

SMALL FRUIT PLANTS,

SEEDS, and SEED POTATOES.

Catalogue free. Address F. M. HEXAMER, New-Castle, Westchester Co., N. Y.

STRAWBERRY PLANTS.

15 Acres devoted to Strawberries; over 30 varieties. The finest and most extensive stock in the New England States. Catalogue and Price List sent free.

CHAS. S. PRATT, North Reading, Mass.

STRAWBERRIES,

Parmelee's Crescent Seedling. Most valuable discovery yet. Send for circular giving full accounts.

H. H. SMITH, West Haven, Conn.

STRAWBERRY PLANTS.

Crescent Seedling, $3 per 1,000 | Chas. Downing, $2 per 1,000
Great American, $4 per 1,000 | Wilson's Albany, $2 per 1,000
Packed in the best manner, free.

N. P. BROOKS, Bricksburg, N. J.

Eureka Strawberry Huller.

Sent by mail for 10 cents each. Address

A. S. BUNKER,
288 Common street, Lawrence, Mass.

Agents wanted.

BRANDYWINE NURSERY.

First-class Plants. French's, Cumberland Triumph, Kentucky, Sharpless, and other Strawberries. 1-year-old CC Asparagus. 1 and 2-year-old Osage, Rhubarb, Currants, Kittatinny and Wilson Blackberries. Pride of Hudson, Herstine, Bristol, Brandywine, Highland Hardy, and other Raspberries. Grape Vines, Fruit and Shade Trees, and Evergreens. **Send for prices and four liberal offers to**

F. C. BIDDLE, Chadd's Ford, Pa.

PEARL MILLET.

Just received a full lot of *Extra Cleaned Seed*, 10 cts. per ounce, 25 cts. per ¼ lb., 85 cts. lb., post-paid. New Amber Cane Seed 50 cts. lb., post-paid. Send for our Illustrated Seed Catalogue containing 7 special premium offers. (With every order for $3 worth of seeds by the packet and oz., we send the *Am. Agri.* 1 year free.) Also price list of Trees and Plants. Get our prices before buying.

FERRIS, MINARD & CO., Poughkeepsie, N. Y.

$20 Worth of Small Fruit Plants for **$5**—**30 Selected Varieties** for the family—**Splendid List** for **EVERY HOME.** Fine opportunity for Clubs or Agents. **$100** worth, or five **$5** Lists for **$20.** *See liberal offer.* Send for Catalogue, *free.*

JOHN S. COLLINS, Moorestown, N. J.

JOHN SAUL'S

Catalogue of New, Rare, and Beautiful Plants.

will be ready in February, with a colored plate.—Many new and beautiful Plants are offered, among Dracænas, Crotons, and other fine foliage plants, with a rich collection of Greenhouse and Hot-house Plants; Bedding Plants; new and choice Roses; Dahlias, etc. Well grown and at low prices. Free to all my customers, to others 10c.—a plain copy free.

JOHN SAUL, Washington, D. C.

NEW & RARE PLANTS.

The largest and most remarkable collection ever offered for sale in this country. Also an extensive assortment in large quantities of **FRUIT** and **ORNAMENTAL TREES, SHRUBS** and **VINES.**

SPECIALTIES—Japanese Maples, Rhododendrons, Hardy and **Greenhouse Azaleas, Camellias, Roses, Magnolias, Purple Beech,** and **New** and **Rare Plants.**

Price-list free. Descriptive Catalogue 10 cts.

PARSONS & SONS CO. (Limited),
KISSENA NURSERIES, Flushing, N. Y.

To Lovers of Flowers.

My list of Flower Seed comprises all the old favorites and many of the newer sorts. Also a selection of Ornamental Grass and Fern Seed. The common German and Botanic name of the seed, a description of the flower, and directions for culture is printed on each packet. **The sorts named by parties ordering, or my own selection.** *Sent by mail, post-paid, at the following rates: Per 7 packets,* 25 *cts.; per* 14 *packets,* 50 *cts.; per* 30 *packets,* $1.

F. E. McALLISTER, 29 Fulton St., N. Y.

Postage stamps accepted. Please mention this paper.

$1.00 FLOWER GARDEN $1.00

13 Monthly Blooming Roses or, 22 Splendid Verbenas, $1. 4 Geraniums, 4 Abutilons, and 4 Begonias or 12 Carnations, $1. 4 Fuchsias, 4 Carnations, & 4 Double Petunias, all different, $1. 4 Calla Lilies, 4 Tuberoses and 4 Smilax or 12 Geraniums, $1. 5 Heliotropes, 5 Lantanas & 5 Chrysanthemums or 10 Fuchsias, $1. 2 Golden Tricolor, 4 Silene & 2 Happy Thought Geraniums, $1. Sent by mail postage paid, or the 6 collections per ex. for $5. Illustrated catalogue sent free on application.

Sked Paddock & Co., Cleveland O.

"FRUIT of the GODS."

(Diospyros Kaki) the Japan Persimmon.

We offer choice varieties of this most remarkable new fruit, imported direct from Japan. *Iron-clad* Apples, *Sharpless Seedling* Strawberry, *Gregg* Raspberry, *Snyder* Blackberry. Complete assortment of *Fruit, Shade,* and *Ornamental* Trees and Shrubs. *Roses,* Flower and Plant *Novelties.* Send for new Catalogue. **BAIRD & TUTTLE, Agents, Bloomington Nursery, Ill.**

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 133.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

Beet-Sugar in Maine.—If there is anything that it is safe to predict, it is that the raising of sugar-beets and the manufacture of sugar from them, must, at some time, sooner or later, become an important industry in this country. The pioneers of beet-sugar in this country, the Gennert Brothers, in spite of former failures, are still at work, and as hopefully as ever. They are now engaged by the State of Maine, to carry on experiments with a view to promote this interest, and from what we learn from the elder Gennert, in a recent brief interview, their report will possess great interest, not only for the people of Maine, but for others. They find that beets very rich in sugar may be raised in the very northern most parts of the State, on the borders of Canada. To save transportation, fuel being cheap, the beets raised there are dried, thus reducing them to one-fifth of the original weight. The introduction of a new crop and a new industry has many obstacles to contend with, especially among farmers who are by nature conservative and cautious. In Europe, one of the great advantages of sugar-beet growing is that the "marc," or pulp, after the sugar is extracted, is worth nearly as much as food for cattle as were the original roots, and the establishment of a beet-sugar factory in a farming neighborhood is looked upon as a blessing, as it supplies the farmers with such valuable feed. In the Maine experiments, the Messrs. Gennert were offered a very good price for the pulp, to be taken out of the State; they did not feel at liberty to sell it thus, but offered it to farmers in the State who would pay the freight on it; the railroads co-operated by carrying the pulp to any point at a nominal price of 50c. a ton. Strange to say, they could not get rid of their pulp on these terms! The whole matter was so new, the farmers were so unused to this kind of cattle food, that they were afraid, as a general thing, to accept as a gift what a few large farmers were willing to pay a good price for. This, and all other obstacles, will ultimately be overcome, and each State, where the climate will allow, will not only produce all the sugar it consumes, but have a surplus. We expect to see the time when beet-sugar factories, owned by farmers, and conducted similarly to the cheese factories, will be established all over the country and with most beneficent results to our agriculture.

A Big Fish—Spearing Pickerel.—Jan. 15th a long, suspicious box came to our sanctum, expressage paid, which from its feel and a slight trace of blood, would have been turned over to the Coroner or police, to open, had it been a little wider and deeper. Removing the cover with due caution, revealed a Chautauqua Lake pickerel about as long as a man, over six and twenty pounds in weight, and meat enough to supply sundry steaks, fries, broils, and a "chowder" for half a dozen of the editorial corps—of a quality so good as to beget a strong desire to have a hand in the paying sport presented by the "Silvery Lake" to many a resident. A note in the box added to the pleasure of eating this particular fish, as it informed us that it came as a friendly recognition of our work from an old reader of the *American Agriculturist*, Mr. ISAAC NOBLE, of Fluvanna, Chautauqua Co., N. Y., now in his 70th year, who caught the fish himself, on Jan. 9.—In answer to our letter of inquiry, Mr. Noble gives us a number of particulars of which we have only room for the following: His neighbor, Maj. Arnold, caught a pickerel this winter that turned the scales at 36 lbs. Three others caught this year weighed 26 lbs., 27¼ lbs., and 32 lbs. In past years another neighbor has taken seven that weighed 33 to 35 lbs. each, which is above the maximum weight, though one of 48 lbs. was reported a few years ago.—In fishing, they erect, with thin boards upon the ice, a little house, 3 x 4 feet, 4½ feet high, painting it black inside, as light scares off the fish. A hole in the floor, 2 feet square, sits over a little larger cutting through the ice. A spear with a handle 5½

feet long, weighted with lead, hangs on one side of the hole, with half its length in the water, ready for instant use, when a pickerel comes within reach. A strong cord is fastened to the end of the spear handle. A gaff-hook is used for landing the fish after bringing him to the opening with the spear and cord. A decoy fish is made of wood, 4 to 6 inches long, with sheet-iron fins and leather tail, weighted to keep it in position, and painted to look natural in the water. This is attached to a cord 6 or 8 feet long, and by bending the tail is made to sail around near the opening. It is often grabbed by the pickerel, which is in turn impaled upon the spear.

Catalogues Received.

SEEDSMEN.

R. H. ALLEN & Co., No. 189 and 191 Water St., N. Y. City, is as neat and as full as usual; it contains a number of specialties in the way of fodder crops.

W. E. BARRETT & Co., Providence, R. I.—Roger Williams invented Sweet Corn; his successors have discovered and invented many excellent things, and what B. & Co. don't know about them isn't worth knowing.

HUGO BEYER, New London, Iowa, offer vegetable and flower seeds "grown in and for the West."

J. BOLGIANO & SON, 28 So. Calvert St., Baltimore, Md. This house, established in 1823, keeps up its reputation.

PAUL BUTZ & SONS, New Castle, Pa., offer tested vegetable and flower seeds.

JOSEPH HARRIS, Moreton Farm, Rochester, N. Y.—Special notice was given last month.

R. D. HAWLEY, Hartford, Conn.—Several specialties. Agricultural implements, etc.

HOVEY & Co., No. 16 So. Market St., Boston, Mass.—The same well known firm, with all modern additions and improvements.

J. R. & A. MURDOCH, Pittsburgh, Pa., have a very full seed catalogue, to which they add a large list of greenhouse and other plants.

ISAAC F. TILLINGHAST, Factoryville, Pa.—Vegetable and flower seeds; vegetable plants and new potatoes.

ROBERT VIETCH & SONS, New Haven, Conn., issue wholesale and retail catalogues of seeds, and offer a large collection of plants.

SAMUEL WILSON, Mechanicsville, Pa., offers a large list of seeds of his own growing and others.

NURSERYMEN.

GEORGE ACHELIS, West Chester, Pa., sends his wholesale list of a very large stock suited to the trade.

S. J. ALLIS, Erie, Pa. Grapevines and small fruits generally, with sensible advice.

FRANCIS C. BIDDLE, Chadd's Ford, Delaware Co., Pa. General nursery stock, with special offers for collections.

CROSBY, GORDON & Co., Danbury, Conn. The name of this firm of nurserymen was misspelled last month.

OLIVER DODGE, Concord, N. H. A general assortment, with several specialties.

SAMUEL EDWARDS, Mendota, Ill. Small fruits, evergreens, etc.

A. HANCE & SON, Red Bank, N. J. A full and interesting catalogue, with illustrated novelties in fruits and ornamental plants.

HEIKES NURSERIES Co., Dayton, O., send their semi-annual Trade List.

F. M. HEXAMER, New Castle, West Chester Co., N. Y. A full list of small fruits, including all the novelties, seed potatoes, and various specialties.

ISAAC HICKS & SONS, Old Westbury, L. I., N. Y. In acknowledging catalogues, we are obliged to be brief and can not say what we sometimes would. We especially commend this catalogue for its brevity. No one knows better than Isaac Hicks what fruits are suited to the peculiarities of Long Island; he gives these, and there stops. Long Islanders will find Isaac a safe guide.

D. E. HOXIE, Northampton, Mass., has a full and well-considered catalogue of small fruits.

E. C. HUBBARD, Water Valley, N. Y., makes a specialty of small fruits, and has all the novelties.

R. S. JOHNSTON, Stockley, Del. General fruit list, and makes a specialty of June-budded peach-trees.

KELSEY & Co., St. Joseph, Mo., send their wholesale list, which, besides general nursery stock, includes greenhouse plants.

SAMUEL KINSEY, Dayton, O.—Wholesale list for this season, with various accessories, such as imported stocks, cuttings, etc.

LAPHAM & ANTHONY, Clayton, Del., call theirs the "Dollar Nursery," as they make a speciality of sending $1 collections of small fruits by mail.

WM. S. LITTLE, Rochester, N. Y., sends a wholesale list of stock in every department.

J. W. MANNING, Reading, Mass., has some very sensible talk in his catalogue. We are glad to see that he advocates the planting of one of our favorite native shrubs —*Clethra alnifolia*, of which he gives a cut.

D. R. MARVIN, Watertown, N. Y., makes a specialty of grapevines and offers a large list.

RANDOLPH PETERS, Wilmington, Del., being on the border between North and South, includes varieties belonging to both sections. Peaches are a specialty with him; of these he makes, according to the time of ripening, no less than 15 classes!

H. H. SMITH, West Haven, Conn.—Small fruits, especially that "wonderful berry" the Crescent strawberry.

STEELE BROS., La Porte, Ind.—A list of small fruits, and giving their experience.

JOHN VANLOON, New Amsterdam, Wis.—A choice selection of small fruits, specialties in seeds, and to those who purchase plants, etc., of him, he supplies the *American Agriculturist* on favorable terms.

J. A. VAUGHN & Co., Carver, Mass.—General fruit and ornamental stock, with cranberries as a specialty.

H. K. VICKROY, Normal, Ill. Small fruits, vegetable plants, and boxes.

E. B. UNDERHILL, Poughkeepsie, N. Y. Small fruits, about which he makes some plain talk.

H. W. WILLIAMS & SONS, Batavia, Ill. Wholesale list of nursery stock. Seed potatoes, tree labels, etc.

FLORISTS.

C. L. ALLEN & Co., Queens, (L. I.) N. Y. A supplementary list of gladiolus and other bulbs.

P. J. BERCKMANS Augusta, Ga. Greenhouse and bedding plants, especially those suited to Southern gardens.

ROBERT BUIST, 67th street and Elmwood avenue, Philadelphia, Pa. This veteran florist devotes a supplementary catalogue to this spring's novelties.

PAUL BUTZ, New Castle, Pa. Both wholesale and retail lists of a large stock of greenhouse and other plants.

J. L. DILLON Bloomsburg, Pa. Besides greenhouse and bedding plants offers small fruits.

THOMAS ELVERSON, New Brighton, Pa., offers, besides a general collection of plants, choice flower seeds.

W. A. HARKETT, Dubuque, Iowa. A general stock, including the "New and Rare."

HOOPES BRO. & THOMAS, Westchester, Pa. The ornamental department of this establishment, as shown by this catalogue, is very full, while the instructions are concentrated wisdom.

ARNOLD PUETZ. Jacksonville, Fla., offers plants and seeds, including those native to Florida, besides basket work and other local products.

H. S. RUPP, Shiremanstown, Pa. A general plant catalogue, with small fruits.

JOHN SAUL, Washington, D. C.—This catalogue is as full as usual, and, as usual, contains many novelties not offered by others. A special Rose catalogue gives the new roses offered abroad last year, with a brilliant colored plate of "The Queen of the Bedders."

CHAS. T. STARR, Avondale, Pa.—A very full catalogue of "new and beautiful plants;" also vegetable plants.

DEXTER SNOW, Chicopee, Mass., issues one of the most exquisitely neat catalogues that we have seen. The matter appears to be as choice as the manner, and the list of Ferns is very full and select.

W. C. WILSON, 45 West 14th St., New York City, and Astoria (L. I.), N. Y., includes in one catalogue a great variety of greenhouse and bedding plants, nursery stock, and garden and flower seeds. "If you dont see what you want, ask for it."

W. B. WOODRUFF, Westfield, N. J. Besides general fruit stock, offers vegetable plants.

IMPLEMENTS AND MACHINES.

BELCHER & TAYLOR, Chicopee Falls, Mass.—A beautifully illustrated catalogue of a great variety of excellent implements.

BLYMYER MANUFACTURING Co., Cincinnati, O., in their 20th annual edition of their "Sorgo Hand-Book," illustrate and describe their sorgo machinery, steam engines, and other articles.

DAIRY SUPPLY Co., No. 15 Murray St., N. Y. City.—A new Creamery Pan, which seems to combine several excellent features.

JONES, FAULKNER & Co., Utica, N. Y.—Apparatus and supplies for cheese factories, creameries, and dairies in great variety.

MINARD HARDER, Agricultural Works, Cobleskill, N. Y.—Railway horse-powers and thrashers.

NEW YORK PLOW COMPANY, 55 Beekman St., N. Y., offer besides their specialties in plows, a great variety of other implements.

EUGENE ROCK, Glens Head (L. I.), N. Y.—A Picket-stake and Swivel for tethering animals.

WHEELER & MELICK Co., Albany, N. Y., give a full description of their special machines, including horse powers, La Dow's harrow, threshers, etc., etc.

WHITMAN & BURRELL, Little Falls, N. Y.—Boilers, engines, steam-pumps, and dairy supplies of every kind, from gang presses to cheese coloring.

WOOD MANUFACTURING COMPANY, Worcester, Mass., make the emery grinder, for mowers, etc.

WRIGHT & THORNE—The Orange Judd Company, 245 Broadway, N. Y., General Agents.—An illustrated catalogue of Improved Archery Goods, comprising a great variety of great excellence.

FERTILIZERS.

PACIFIC GUANO COMPANY, No. 43 Milk St., Boston, Mass., set forth the merits and give directions for the use of their "Soluble Pacific Guano" in a neat pamphlet.

MAPES' FORMULA AND PERUVIAN GUANO Co., No. 158 Front St., New York, present in a treatise of 40 pages a full account of the various fertilizers made by them.

L. B. DARLING & Co., Pawtucket, R. I., offer pure Ground Bone and the various crude fertilizers, besides fertilizers of their own make. Their publication of the laws relating to fertilizers, and a portion of the report of the State Inspector of Massachusetts, shows a tolerable amount of confidence in their own products.

POULTRY.

LOUIS ANDERSON, Flemington, N. J.—An illustrated list of his special breeds.

G. P. BURNHAM, Melrose, Mass., issues several bulletins concerning his "Standard Premium Fowls."

S. C. SATTERTHWAIT, Aiken, S. C., sends an illustrated price-list of his fowls, turkeys, ducks and geese.

A. N. SHEPHERD, Sand Brook, N. J., offers several breeds, including Plymouth Rocks and Light Brahmas.

FOREIGN CATALOGUES.

MCBROOM & WOODWARD, London, Ont., Canada.—A very neat and full catalogue of garden, agricultural and flower seeds.

FD. CHARRON, Lyons, France.—A very full list of seeds of all kinds.

VILMORIN, ANDRIEUX & Co., Paris, France (Pabst & Esch, No. 21 Murray St., N. Y. Agents.)—The issue for this spring is not less a wonder of completeness than it has been in former years.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending March 12th*, 1879, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats*
23 d's *this* m'th	339,000	3,215,000	2,119,000	97,000	226,000	409,000
28 d's *last* m'th	337,000	2,131,000	1,314,000	58,500	429,000	431,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	378,000	8,103,000*	4,207,000*	372,000	263,000	1,098,000
28 d's *last* m'th	345,000	7,316,000*	4,104,000*	383,000	290,000	1,107,000

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1879	359,000	3,215,000	2,119,000	97,000	226,000	409,000
23 days 1878	343,000	3,804,000	1,516,000	91,500	569,000	403,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1879	378,000	8,103,000	4,207,000	372,000	263,000	1,098,000
23 days 1878	339,000	2,912,000	3,338,000	243,000	551,000	536,000

3. *Stock of grain in store at New York.*

	Wheat.	*Corn.*	*Rye.*	*Barley.*	*Oats.*	*Malt.*
	bush.	bush.	bush.	bush.	bush.	bush.
Mar. 10, 1879	3,029,051	1,363,672	416,075	696,625	600,750	52,853
Mar. 11, 1878	1,639,371	460,454	114,200	660,145	1,090,351	275,705
Mar. 12, 1877	2,646,287	1,517,208	284,607	475,611	769,451	327,659

4. *Exports from New York, Jan. 1, to Mar. 10.*

	Flour.	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*	*Peas.*
	bbls.	bush.	bush.	bush.	bush.	bush.	bush.
1879	563,000	6,981,000	5,793,000	712,000	37,000	38,500	101,000
1878	475,400	7,483,409	2,776,780	339,829	621,599	37,847	55,350
1877	254,958	1,576,839	2,078,553	164,389	95,457	29,338	124,827
1876	357,715	1,910,068	2,630,925	15,387	—	46,266	196,153

CURRENT WHOLESALE PRICES.

	Feb. 12.	Mar. 12.
FLOUR—Super to Extra State	$3 20 @ 4 25	$3 35 @ 4 25
" Super to Extra South'n.	3 25 @ 6 25	3 35 @ 6 50
" Extra Genesee	3 90 @ 5 50	4 00 @ 5 75
" Superfine Western	3 15 @ 3 55	3 35 @ 3 75
" Extra Western	3 60 @ 8 75	3 75 @ 9 00
" " Minnesota	3 60 @ 8 25	3 85 @ 8 75
RYE FLOUR, Superfine	2 65 @ 3 15	2 75 @ 3 25
CORN-MEAL	2 10 @ 2 75	2 00 @ 2 70
BUCKWHEAT FLOUR, ₱ 100 lbs	1 60 @ 1 85	Nominal.
BUCKWHEAT, per bush	49 @ 50	53 @ 53
WHEAT—All Kinds of White	1 00 @ 1 11½	1 05 @ 1 16
All kinds of Red and Amber	74 @ 1 11	82 @ 1 13½
CORN—Yellow	45 @ 56	45 @ 53
" Mixed	42½@ 47½	44 @ 46½
" White	45 @ 52	45 @ 51
OATS	29 @ 37	31 @ 37½
RYE	56½@ 62½	60 @ 63
BARLEY	70 @ 1 25	70 @ 1 26
HAY—Bale, ₱ 100 lbs	80 @ 80	80 @ 80
STRAW, ₱ 100 lbs	25 @ 50	30 @ 60
COTTON—Middlings, ₱ lb	9½@ 9½	9½@ 9½
HOPS—Crop of 1878, ₱ lb	6 @ 15	5 @ 15
" 1877, ₱ lb	4 @ 6	3 @ 5
" olds, ₱ lb	2 @ 3	2 @ 4
FEATHERS—Live Geese, ₱ lb	32½@ 47½	30 @ 45
SEED—Clover, West. & St. ₱ lb	6½@ 7¾	6 @ 7¾
" Timothy, ₱ bushel	1 20 @ 1 30	1 30 @ 1 50
" Flax, ₱ bushel	1 42½@ 1 45	1 35 @ 1 40
TOBACCO, Kentucky, &c., ₱ lb	2½@ 12½	2½@ 12½
" Seed Leaf, ₱ lb	5 @ 50	7 @ 50
WOOL—Domestic Fleece, ₱ lb	22 @ 40	20 @ 38
" Domestic, pulled, ₱ lb	17 @ 36	17 @ 35
" California	10 @ 25	12 @ 25
TALLOW, ₱ lb	6½@ 6¾	6¾@ 6¾
OIL-CAKE—₱ ton	27 00 @ —	27 00 @28 00
PORK—Mess, ₱ barrel	9 00 @10 75	9 65 @10 65
Extra Prime, ₱ barrel	@ —	@ —
BEEF—Extra mess	10 50 @11 50	10 50 @11 50
LARD, in tcs. & bbls, ₱ 100 lb	6 90 @ 7 25	6 40 @ 6 85
BUTTER—State, ₱ lb	12 @ 27	12 @ 25
" Western, poor to f'cy, lb	7 @ 30	7 @ 28
CHEESE	3½@ 9½	3 @ 9½
EGGS—Fresh, ₱ dozen	21 @ 23	15½@ 17½
POULTRY—Fowls, ₱ lb	8 @ 13	8 @ 12
" Chickens, Penn., ₱ lb	9 @ 13½	10 @ 17
Turkeys—₱ lb	10 @ 14	10 @ 16
Geese, ₱ pair	1 12 @ 2 00	1 00 @ 1 75
₱ lb	6 @ 10	— @ —
Ducks, ₱ pair	50 @ 90	45 @ 90
" ₱ lb	9 @ 15	10 @ 18
DUCKS, Wild, ₱ pair	20 @ 1 50	15 @ 2 00
GROUSE, ₱ pair	40 @ 60	— @ —
PIGEONS, ₱ doz	— @ —	75 @ 1 00
HICKORY NUTS—₱ bush	1 50 @ 2 00	1 50 @ 2 37
APPLES, ₱ barrel	75 @ 2 50	1 00 @ 2 75
ORANGES, ₱ bbl	3 50 @ 6 00	4 00 @ 8 00
" ₱ box	— @ —	1 25 @ 4 00
BEANS—₱ bushel	1 15 @ 2 60	1 90 @ 2 40
PEAS—Canada, in bond, ₱ bu	73 @ 74	70 @ 73
" new So., ₱ bushel	— @ —	5 00 @ 6 00
POTATOES, ₱ bbl	2 00 @ 3 00	2 00 @ 3 25
" new, Bermuda	— @ —	5 50 @ 7 00
" Sweet, ₱ bbl	2 00 @ 2 50	2 00 @ 2 37½
TURNIPS ₱ bbl	75 @ 1 00	87½@ 1 25
TOMATOES, new, ₱ small box	— @ —	25 @ 65
RADISHES, new So. ₱ 100 bun	— @ —	1 75 @ 2 50
BROOM-CORN	2 @ 5½	2 @ 6¼
CABBAGES—₱ 100	3 00 @ 6 00	4 00 @ 8 00
SPINACH, So., ₱ bbl	— @ —	2 75 @ 3 50
ONIONS—₱ bbl	2 00 @ 3 50	2 50 @ 5 50
CELERY, per dozen	50 @ 78¼	65 @ 1 00

More activity has been noted in the Money Market, and loan and discount rates have been ruling higher, as business requirements have been increasing in volume and urgency, with the revival of the Spring trade. Cable advices have been of a more favorable tenor, in relation to Breadstuffs, but not otherwise encouraging to shippers of American produce. Western markets have been very variable, particularly for Grain, and Hog products, chiefly under speculative influences, which led to more or less serious disturbances of values—notably so in the instance of Spring Wheat in the Chicago market, where on Friday, March 7, a fall occurred of fully 5 cts. a bushel, on a decided pressure to place supplies, mainly, as reported, on orders from New York to sell, the most important of

which, as affecting the large stock then controlled by a prominent speculative operator, have been represented as forgeries, thus occasioning much excitement and discussion. Receipts of Produce at the seaboard have been of greater magnitude, and have tended to weaken prices. ....Breadstuffs have been quite active here, especially Wheat, which has been very freely dealt in, for prompt and future delivery,—for prompt delivery, in good part, for export, and for future delivery, almost wholly on speculative account, and Winter grades attracting most attention. Prices of Wheat, which were on the advance, early in the month under review, reacted sharply toward the close, and left off heavily. Corn has been in fair request for early delivery, and also freely purchased for future delivery, on, however, an unsettled market, closing depressed and declining, the offerings gaining on the demand, and holders showing more eagerness to realize. Rye has been taken to an important aggregate for export at stronger rates, but wound up in favor of buyers. Barley has been rather more sought after, closing with more steadiness. Oats have fluctuated widely, on a comparatively brisk trade, in good part speculative. Flour has been irregular, closing heavily, on accumulating supplies, and freer offerings for future delivery....Provisions have been more or less seriously disturbed, through speculative action, and in the line of hog products, fell off in values toward the close on a restricted movement. Butter and Cheese in fair request, the former, however, at reduced quotations. Eggs, lower, but at the current rates, meeting with a readier sale....Hops declined, and the market closed for other than the better qualities weak, on a moderate call for supplies....Wool has been in fair demand at about steady prices, in most instances. ... Seeds have been irregular, and, at the close, dull. Of the dealings of the month the most important was a sale of 8,000 bushels rough Flour at $1.35 per bushel....Tobacco ruled about steady, on a somewhat better inquiry, partly for shipment....Ocean freights fairly active, particularly for Grain, but left off easier.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Feb. 11	8,467	105	1,031	26,850	36,981
Feb. 18	10,730	110	1,029	25,919	39,327
Feb. 25	10,799	84	1,010	20,623	39,809
Mar. 4	8,821	45	1,127	20,066	27,112
Mar. 11	9,482	105	1,314	22,534	26,544
Total for 5 Weeks	48,279	450	5,511	115,997	169,723
do. *for prev. 4 Weeks*	40,591	773	3,463	90,896	146,482

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	9,656	90	1,002	23,199	33,944
do. do. *last Month*	10,148	193	866	22,724	36,620
do do. *prev's Month*	10,093	122	1,111	21,986	43,391

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Feb. 11	7¼@11 c.	8 @10¾c.	9¼c.
Feb. 18	7 @11 c.	8¼@ 9¾c.	9¼c.
Feb. 25	7½@11 c.	8¾@ 9¾c.	9 c.
Mar. 4	7½@11¼c.	8¾@ 9¾c.	9 c.
Mar. 11	7¼@11 c	8¼@ 9¼c.	8¾c.

Beeves.—The market for beef has been dull, and prices have shrunk gradually for the past five weeks. The supply has been heavy and the demand light, and the result as might have been expected. The large receipts of dressed beef may have had some effect, as prices for choice sides brought only 7@7¼c. ℔ lb. while city sides were offered at 8@8¼c. At the close of our report the market was dull with lower prices, the sales being 7¼c. ℔ lb for Cherokees of 55 lbs. to the 100, 8c. ℔ lb for rough steers of 55 to 56 lbs.; 9¼c. ℔ lb for good natives of 56 lbs. to the 100, and 9¼@10¼c. for prime to extra of 57 lbs. to the 100.

Cows.—Arrivals are light, and business has been still lighter. The excitement about pluero-pneumonia in the city stables has stopped business in a measure. Quotations are $30@$60 per head, according to quality.

Calves.—A gradual weakening of the market for calves has been noticed, the supply having been too liberal, especially of live calves. Prices rule at the close of this report at 5¼@7¼c. ℔ lb for live; ordinary dressed calves bring 8@8¼c., and the best Jersey hog-dressed 10c. ℔ lb....**Sheep.**—A better feeling marked the closing business of the month, and prices were advanced fully ¼c. ℔ lb. Fair sheep sold for 5@5¼c. ℔ lb live weight; prime sheep sold at 5¾@6c. ℔ lb. the latter price for sheep fit for export; choice wethers exceeded the latter price a fraction. Lambs ranged from 5¾@6¼c. ℔ lb.... **Swine.**—There is no change to notice in hogs, the market has ruled steady and prices close at 4¼ to 4¼c. ℔ lb for live, and 5@5¼c. ℔ lb for city dressed; pigs brought 5¼c, and Jerseys reached 6¼c. ℔ lb.

Horse Market.—The tendency of the horse market shows that the breeding of first class driving and carriage horses has not yet been overdone; the enquiry being wholly confined to this class. The feeding of a horse that will bring $1000, costs little more than a "plug," which will bring only $100, the difference being chiefly profit or payment for enterprise and skill. The trade in work horses is dull, and prices unchanged. The present out-look is promising for export trade, and there is a demand for some fine driving teams, worth $1000 and upwards. In the horse market as in other business, there is plenty of room at the top, while there is a crowd below.

Prices of Feed.

Bran, per ton	$16.00@$18.00
Middlings, per ton	19.00@ 20.00
Ground Feed, per ton	21.00@ 23.00
Linseed-oil-cake, western, per ton	35.00@ 40.00
Cotton-seed-cake, per ton	25.00@ —
Chandler's Scraps, per lb	2@ 3

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	9 @9¼c.
Sulphate of Potash (potash 44 per cent) per lb	3 @3½c.
do. do. (potash 27½ per cent) per lb.	1½@1¾c.
German Potash Salts (potash 12 to 15 p. c. p. ton	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb	1¾@2 c.
Nitrate of Soda, per lb	3¾c.@4¼c.
Sulphate of Ammonia (25 per cent.), per lb	4¼c.@4¾c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00
No. 1, Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton	$56.50
do. do. Lobos, do. do. do	47.50
do do guaranteed, ℔ ton, cargo J	56.00
do do, rectified, per ton, 10.20 p. c.	60.00
do. do. do. 8.40 p. c.	51.00
Soluble Pacific Guano, ℔ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs	25.00
do. do. do. (light soils) per 1,000 lbs	25.00
do. Grass and Grain Top-dressing, ℔ 1,000 lbs	25.00
do. Fruit and Vine Manure, do.	17.50
do. Bone, strictly pure, meal ....per ton	42.00
do. do. medium do.	36.00
do. do. dissolved do.	42.00
do. Potato Manure per 1,000 lbs	22.50
do. Corn do. per 1,000 lbs	23.75
Stockbridge Corn Manure, per acre	20.00
" Potato do do	10.00
" Tobacco do do	50.00
" Rye do do	10.00
" Wheat do do	15.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton	45.00
Walton Wham & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

A Patent for Improvements in Salt-Making has been granted by the English Government to the manufacturers of **Higgin's Eureka Salt.** For many years the Ashton's brand has been considered the best for dairy purposes, but now comes a new brand, which, although costing more to make, is sold at about the same price of Ashton's, and is of greatly superior quality.

The present is an age of progress; the locomotive has superseded the stage-coach, refined sugar has taken the place of raw sugar, new process flour, that made by the old process; and salt is no exception to the general march of improvement, as the result of Mr. Higgin's process shows.

H. K. & F. B. Thurber & Co., New York, the importers have, for the purpose of inducing all dairymen to try this salt, offered a set of magnificent medals (gold, silver, and bronze), in each of the Dairy States, for the 2nd and 3d best butter salted with this salt during the present year. The same offer is also extended to cheese-makers. Most of the fine creameries are now using this salt, and competent judges think that it will materially aid in improving the standard of American dairy products. For further information regarding medals, address the Secretary of your State Agricultural Fair, and for the Salt apply to any of the leading salt dealers.

Highest Award AND ONLY MEDAL FOR French Dressing AND Satin Polish.
B. F. BROWN & CO.
Boston, Mass.

A GREAT NOVELTY.

"Stevens' Metal Lined Wood Safety Lamp," the cleanest, safest and most elegant Lamp in the world. Awarded a Bronze Medal and Diploma at the Mass. Charitable Mechanic Association Fair in 1878. Fifteen thousand sold during the past year, and universally adopted wherever introduced. State and County rights for sale, and goods equal in value to the amount paid for territory furnished *free* to the purchaser. Any one with small capital that is looking for a safe, sure paying business, will find it for their interest to correspond with me. Sample Hand Lamps, per mail, 50 cents. Stand Lamps, $1.00.
Address **G. M. STEVENS,** Box 1695, Portland, Maine.

METALLIC SHINGLES

Make the best roof in the world. Superior to Tin. Cheaper than Slate, and less than ¼ the weight. Can not Crack. Fire Proof. Can be put on by any Carpenter. 75 per cent saved in freight, with no breakage in carriage or putting on. ☞ Will last a life-time.
Gold Medal awarded at Paris Exposition, 1878. Send for full description and prices to the
IRON-CLAD MANUFACTURING CO.,
P. O. Box 2528. New York City.

50 Perfumed, Snowflake, Chromo, Motto cards, name in gold and jet, 10c. G. A. SPRING, E. Wallingford, Ct.

GOLDING HOP ROOTS.

A new English variety, highly esteemed among the hop-growers of Kent and other portions of Great Britain. Large, productive, and of fine quality. A great improvement on any variety hitherto offered. We recommend this variety, with the greatest confidence, to all hop-growers. By mail, post-paid, each, 25 cents; doz., $2.25; hundred, $15.00, at purchasers' expense. Address
B. K. BLISS & SONS,
34 Barclay St., New York.

THE LADY GRAPE.

The best and earliest perfectly hardy WHITE GRAPE in America. Ripens in August, and is hardier than Concord. Two strong vines post-paid, by mail, for $1. One dozen 1 year, $4. Also Delaware, Concord, Brighton, Moore's Early, and all other valuable varieties, over 40 kinds, at greatly reduced prices. Raspberries, Strawberries, Gooseberries, Flowering-plants, etc. Catalogues free.
GEO. W. CAMPBELL, Delaware, Ohio.

Forest Rose Strawberry Plants

At $1 per 100; $8 per 1,000. Also the leading and new varieties of **Strawberry, Blackberry,** and **Raspberry** Plants, including "**Gregg**" in large supply, Japan, Persimmon, Japan Maple. Send for price-list of
GENERAL NURSERY STOCK
and small fruit. LEO WELTZ, Wilmington, O.

Evergreens, Forest Trees, Very Large Stock, All NURSERY-GROWN, Evergreen Seeds, Hardy Catalpa Seeds, R. Douglas & Sons,
Waukegan, Ill.

THE "GLENDALE" STRAWBERRY.—Very large, beautiful, vigorous, hardy, and productive; and altogether unequalled for lateness and shipping qualities. Price, pre-paid, 12 plants, 75c.; 50, $2.00; 100, $3.00; 1,000, $25.00. M. CRAWFORD, Cuyahoga Falls, O.

PERFECTION POTATO.—100 bushels can be grown from 1 peck. 1 peck, $1; barrel, $8.
JOHN W. LOUNSBURY, Cannons Station, Ct.

10 ROSES MAILED FREE FOR $1

Splendid assortment of Plants sent safely by express or mail, any distance. Satisfaction guaranteed. Send 3 cent stamp for catalogue. Address,
R. C. HANFORD & SON,
Columbus Nursery, Columbus, Ohio.

CENTENNIAL AND GRAND PARIS WORLDS FAIR PRIZES AND
ALL THE U.S. STATE FAIR PREMIUMS IN 1875 & 1876.
PRICE, $250.
TURNS IN A CAR.
REQUIRES LESS HELP.
AND BALES TWICE AS FAST AS ANY OTHER PRESS.
PRICE, $175.
THE GALE IS PATENTED AND UNSALABLE FOR HOME MONEY.
ADDRESS FOR CIRCULAR
P. K. DEDERICK & CO. ALBANY, N.Y.

THAT $500 CHALLENGE AGAIN.

We are ready at any time to run one Dederick Press against two or three other presses, but cannot get that $500 man to time, and suppose the trouble is he cannot raise the $500. Of course our pressing at the rate of ten bales to his one, as timed by the St. Louis Fair committee, cannot be the cause. We reported to Dederick that his shop was closed for the last three months of 1878, and that he had stopped making presses, but, from his advertisements, should say that a Patent Right Thief requires constant watching, the same as any other thief. Now we have his latest and best presses at Albany, the same having been transferred to Dederick by honest men, in settlement for infringement of his patents. To satisfy the public, that it is not alone want of means that scares you, we now offer to bear your expenses, and furnish you with your best press at Albany, and furnish the hay and teams, and beat you two or three to one, and will also bear the expense, of a general invitation to the public, to come and see it done; and if we don't beat you as bad, as to make you ashamed of your press, we may make you a present of one or two to take along back. Communicate direct with,
C. C. POWELL and M. S. SIMMONS, Albany, N. Y.

50 Chromo, Gold-Border, etc., no two alike, 10c., or 20 Lace cards, 10c. DIME CARD CO., Nassau, N. Y.

SHOT GUNS.

FINE ENGLISH & AMERICAN BREECH-LOADERS.

DOUBLE AND SINGLE BARREL.

Our Sportsman's Department will furnish all Sporting Goods at as low, and in many instances lower, rates than can be obtained generally throughout the country. **Guns, Rifles,** etc., delivered free of carriage to any point east of the Missouri River on receipt of price.
Address SPORTSMAN'S DEPARTMENT,
ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

NEW EXCELSIOR LAWN MOWER.

ROLLER, SIDE & BACK WHEEL.

Reduction in Price.

Less Weight. Lighter Draft.

It has been adopted and can be seen in **Practical Operation** in the **Public Parks** of **New York, Brooklyn, Boston, New Haven, Cleveland, Chicago,** and almost all the **Prominent City Parks in the United States and Canadas.**

Roller Mowers, 7 Sizes. Side Wheel, 6 Sizes.

Back Wheel Mowers, 5 Sizes.

Horse Mowers, 4 Sizes.

Our new Horse Mower is conceded to be the **LIGHTEST** and **BEST** Horse Lawn Mower ever made.

N. B.—Horse and Hand Lawn Mowers are alike guaranteed in every respect. Address

CHADBORN & COLDWELL M'F'G CO.,

Send for Circulars. **NEWBURGH, N. Y.**

CITY AND COUNTRY TRADE
SUPPLIED WITH THE

Celebrated Excelsior Lawn Mower.

H. B. GRIFFING,
60 Cortlandt Street, N. Y. City.

Ahead of all Competition!

1879. THE PHILADELPHIA LAWN MOWER. 1879.

SEVEN SIZES FOR HAND USE.
Weighing from 32 to 51 lbs.
THREE SIZES FOR HORSE POWER.

The *complete victory* and highest awards at the exhaustive Field Trial at the Paris World's Exhibition in 1878, together with those at the great hundred day trial at the Centennial in 1876, prove that these machines fully maintain their reputation as the **best** Lawn Mower yet made. Do not buy worthless imitations, when the genuine can be had for the same money.

GRAHAM, EMLEN & PASSMORE,
Patentees and Manufacturers,
631 Market St., Philadelphia, Pa.
Send for Descriptive Catalogue with prices.

NEW PLANTS.

OUR NEW CATALOGUE OF PLANTS,
containing choice new varieties of Bedding, and other rare plants not before offered; mailed to all applicants on receipt of a three-cent stamp. Address
HOVEY & CO.,
16 South Market St., Boston, Mass.

BERRY PICKER

INVENTED AT LAST!

A perfect triumph, supplying a want long felt by Berry Raisers. Send your name and address on postal card for price list, etc. Discount to the trade. Address, **L. B. SILVER,**
Cleveland, O.

Hardy and Alpine Plants.

Our new catalogue of over 80 pages will be mailed free to all applicants. It contains the largest selection of

Hardy Herbaceous Perennials

ever offered in this country; such plants as are well adapted to general cultivation, and which grow without the trouble of planting every year. Also, a full list of

Beautiful and Rare Climbers,
Choice Flowering Shrubs,

Lilies, all desirable old and new sorts.
Irises, including some species new to cultivation, as well as the new varieties of Kæmpfer's Iris.
Phloxes. Over 100 named varieties of **Garden Phloxes,** some never before offered in this country.
Calluna vulgaris (Heather), 25c. and $1.00.
Gentiana acaulis (Stemless Gentian), 25 and 50c.
Lilium Canadense (Canadian Turk's-cap L.), 75c.
Lilium tigrinum, fl. pl. (Double Tiger L.), 15c.; $1.50 per doz.
Rosa rugosa (Ramanas Rose), 30c.; $3.00 per doz.
Spirea palmata (Palmate S.), 50c.; $4.00 per doz.
Prickly Comfrey. This new and promising forage plant is offered in started cuttings and rooted plants, by

Box 180. **WOOLSON & CO., Passaic, N. J.**

FOR 2 DIMES! One pkt. each of Verbenas, Phlox, Double Hollyhocks, Balsams, Striped Petunias, and Pansies. L. D. SNOOK, Barrington, Yates Co., N. Y.

VALUABLE NEW FRUITS.

ONLY $1 EACH BY MAIL POST PAID

WATERLOO Peach, larger and earlier than *Amsden*, or *Alexander*; in dormant bud **$1. Conkling** handsomest Peach known, same price. **Rochester** and **Monroe** Grapes, excellent sorts, $1 ea. **Sharpless** *best new* Strawberry; 6 plants **$1**; 12 plants **$2.** Circulars giving description sent free. Address,
ELLWANGER & BARRY,
Rochester, N. Y.

Bowditch's Flower Seeds.

For $1	you buy	$1.10	worth of Seeds or Plants.
" $3	"	$3.45	" " Seeds or Plants.
" $5	"	$6.00	" " Seeds or Plants.
" $10	"	$12.50	" " Seeds or Plants.
" $20	"	$26.00	" " Seeds or Plants.

My **New Catalogue for 1879** is the best and most comprehensive work issued. It contains numerous **Engravings,** illustrating thousands of the best **Flowers** and **Vegetables,** and also descriptions of all the **Beautiful Plants.** Mailed for a 3-cent stamp. To customers free.

Seeds or Plants by Express or Mail. (Safety guaranteed.)
WM. E. BOWDITCH,
645 Warren St., Boston, Mass.

ORNAMENTAL TREES AND PLANTS OF EVERY DESCRIPTION.

A. HANCE & SON, Red Bank, N. J.

DESCRIPTIVE, ILLUSTRATED and PRICED CATALOGUE now READY.
Will be **MAILED FREE** to all **APPLICANTS.**

"ROCKLAND FAVORITE," a seedling of the *Concord. Earlier, better,* and *hardier* than its parent. Send for circular to BRIGGS ARNOLD, Rockland, Mass.

ROSES

6 for $1, 14 for $2, postpaid. *Bedding & Greenhouse Plants* by mail. *Catalogue free.* J. T. Phillips & Son, West Grove, Chester Co., Pa.

FOR SALE.—Greenhouse 19x50 feet, well stocked, and 4 acres of Market Garden ground, with Asparagus and Rhubarb beds, and Small Fruits in full bearing. Good stable and small house on the ground. One mile from this town of eighteen thousand inhabitants; no other greenhouse within 70 miles. Vegetable plants started, and everything in good shape for making crop this season. Possession at once. Price, $3,000. ALVAR AKERS, Johnstown, Cambria Co., Pa.

BACK VOLUMES OF

American Agriculturist.

The publishers of the *American Agriculturist* can supply any of the back volumes of that paper from the Sixteenth to the Thirty-seventh. These volumes contain more varied and interesting information on all matters pertaining to the Farm, Garden, and Household, than can be obtained in books costing three times as much money. Price of each bound volume, at the Office, $2.00; sent post-paid, $2.80.

ORANGE JUDD COMPANY, 245 Broadway, N. Y.

ROSES

By mail, post-paid, (on own roots) 25 cents apiece, $2.00 per dozen, $12.00 per hundred. Large plants (budded or on own roots) per express at purchaser's expense, 50 cents apiece, $4.00 per dozen. **The most select collection in America.** Send for Catalogue, with colored plate, 10c; plain, **free.**

ELLWANGER & BARRY, Rochester, N. Y.

THE DINGEE & CONARD CO'S
BEAUTIFUL EVER-BLOOMING

ROSES

THE CHOICEST FLOWERS GROWN.

We deliver Strong Pot Plants, suitable for immediate bloom, safely by mail, at all post-offices. 5 splendid varieties, your choice, all labeled, for $1; 12 for $2; 19 for $3; 26 for $4; 35 for $5; 75 for $10; 100 for $13. Our Great Specialty is growing and distributing these beautiful Roses. Send for our NEW GUIDE TO ROSE CULTURE—50 pages, elegantly illustrated, and choose from over 500 finest sorts. THE DINGEE & CONARD CO., Rose Growers, West Grove, Chester Co., Pa.

GARDEN & HOUSE PLANTS

For **$1.00** we will send *free by mail* either of the below-named collections, *all distinct varieties:*

8 Abutilons, or 4 Azaleas, or 6 Oleanders, or 12 Stones
8 Begonias, or 4 Camellias, or 12 Centaureas, [crops
2 Caladiums [fancy], or 8 Carnations [monthly],
12 Chrysanthemums, or 12 Coleus, or 4 Marantas,
4 Palms, or 8 Hibiscus, or 12 white-leaved plants,
12 Dahlias, or 8 Dianthus, or 8 Cactus, or 20 Gladiolus,
8 Ferns, or 8 Mosses, or 8 Fuchsias, or 8 Phloxes,
8 Geraniums Zonale, or 8 Dble, or 8 Scented, or 10 Silver
8 Geraniums Fancy, or 8 Variegated, or 8 Ivy-leaved,
4 Gloxinias, or 8 Snap Dragons, or 8 Tuberoses [Pearl],
4 Grape Vines, or 4 Honeysuckles, or 4 Hardy Shrubs,
8 Heliotropes, or 8 Lantanas, or 8 Petunias [double],
12 Pansies [new German], or 8 Salvias, or 8 Primulas,
12 Roses [Tea monthly], or 12 Hardy Hyb., or 12 Climb'g,
12 Basket Plants, or 8 Daisies, or 6 har. Climbing Plants,
12 Scarcer Bedding, or 12 Scarcer Greenhouse Plants,
18 Verbenas, or 12 Blotched Petunias, or 6 Cannas,
25 varieties of Flower, or 20 varieties of Vegetable Seeds,

or by EXPRESS, *buyer to pay charges:*
Any 3 collections for $2; 5 for $3; 9 for $5; 12 for $6; 14 for $7; 18 for $10; or the full collection of 500 varieties of Plants and Seeds—sufficient to stock a greenhouse and garden—for $25, to which our book "Gardening for Pleasure" and Catalogue [value $1.75] will be added.

PETER HENDERSON & CO.
35 *Cortlandt Street, New York.*

SPLENDID **FLOWERS** OVER 1200 Distinct Varieties

All **Strong Plants,** each labeled, delivered safely by mail. **Largest assortment. Low prices.** In business 25 years. *Guarantee satisfaction.* Stock comprises *all desirable varieties.* Only mature plants sent. Our new **Illustrated Hand-Book,** sent free, contains name and description of each plant, with instructions for successful cultivation. *Do not purchase Plants elsewhere before sending for our new* **HAND-BOOK** Every lover of *flowers* should have it. All buyers of *cheap plants* should have it. Every one wanting *new* and *choice plants* should send for our *Hand-Book.* HOOPES, BROTHER & THOMAS,
CHERRY HILL NURSERIES, West Chester, Pa.

Beautiful Ever-Blooming
CARNATION PINKS

Assorted varieties. In colors of *White, Carmine, Rose, Variegated,* and *Yellow.* All labeled. Strong, healthy well-rooted plants. *Sent safely by mail* to any post-office. **6 for 50c.; 14 for $1.** Extra Choice Fancy Varieties, **4 for 50c.; 8 for $1.**

PEARL TUBEROSE
Flowering Bulbs.
By mail: 2 for 13c.; 4 for 25c.; 17 for $1.

LILY OF THE VALLEY
I will mail 3 flowering pips for 15c. *Illustrated Catalogue,* giving practical information about flowers, free.
CHAS. T. STARR, Avondale, Chester Co., Pa.

BEAUTIFUL FLOWERS
A GREEN-HOUSE AT YOUR DOOR

We will send free by mail, and guarantee their safe arrival in **Good Condition,** *our choice*

12 ROSES	12 sorts,	$1
20 VERBENAS	20 "	1
15 Basket or Bedding Plants	15 "	1
10 GERANIUMS	10 "	1
10 CARNATIONS	10 "	1
10 Tuberoses, *all Pearl, large and double*		1
12 Gladioli, *all Flowering Bulbs*		1
2 Camellia Japonicas *and* 2 Azaleas		$1
Hundreds *of others*— CHEAP, *and* many	NEW AND RARE!	

For your choice of varieties, see **our 80-page Catalogue, free to all. We also offer an immense stock** of *Fruit and Ornamental Trees, Evergreens, Small Fruits, Shrubs,* Catalogue with **Colored Plate, 10c.**

6 Hardy Flowering Shrubs	6 sorts,	$1
10 Currant Bushes	10 "	1
25 Raspberry Plants	25 "	1
80 Strawberry Plants	40 "	1
8 Grape Vines	8 "	1
50 Sweet Chestnut *or* 50 Catalpa Trees		$1

26th Year. 15 Greenhouses: 200 Acres.
STORRS, HARRISON & CO., Painesville, Ohio.

TREES

We offer for Spring of 1879, the largest and most complete stock in the U. S. of

Fruit Trees, Grape-Vines, Strawberries, embracing all the *new* and valuable varieties.

Ornamental Trees & Shrubs, deciduous and evergreen.

Roses a specialty—all the finest sorts.

Green & Hot House Plants, including best novelties. Descriptive and illustrated priced Catalogue sent pre-paid to customers, **free,** to others, on receipt of stamps as follows:

No. **1,** Fruits, with colored plate (new edition), **15** cts.; plain, **10** cts. No. **2,** Ornamental Trees etc., with plate, **25** cts.; plain, **15** cts. No. **3,** Greenhouse, Free. No. **4,** Wholesale, Free, and No. **5,** Catalogue of Roses with colored plate, **10** cts.; plain, **Free.** Address

ELLWANGER & BARRY, Rochester, N. Y.

Apple and Cherry Trees.

EVERGREENS. Also, a **general assortment** of **Nursery Stock** at very reasonable prices. Address GEORGE ACHELIS, West Chester, Chester County, Pa.

TREES

500,000 Fruit,
250,000 Evergreens,
500,000 Greenhouse,
Bedding Plants, &c.

Four Catalogues Free. 22d Year. 400 Acres. 13 Greenhouses.
STORRS, HARRISON & CO., PAINESVILLE, OHIO.

FRUIT AND ORNAMENTAL TREES.—Small Fruits, Shrubs, Bulbs, &c. Our new Descriptive Priced Catalogue now ready and mailed free on application. It contains valuable information for tree planters.
WM. H. MOON, *Morrisville, Pa.*

HALF A MILLION OF PEACH TREES,

200,000 suitable to send by mail or express long distances. Also 300,000 No. 1 Apple Trees, 150,000 suitable to send by mail. Prices to suit the times. 66-page Catalogue gratis, showing how and what to plant. RANDOLPH PETERS, *Great Northern & Southern Nurseries,* Wilmington, Del.

GERANIUMS

Bellevue Nursery Company, Paterson, New Jersey.

For Bedding and Market. Best Kinds Only.

NEW ZONALS.—Ethel Beale, New Life, Bridal Bouquet, White Wonderful, and Magnificent, $5.00 per doz.

DOUBLE ZONALS.—80 sorts, $2.00 per doz., $12.50 per 100.

SINGLE ZONALS.—150 sorts, $1.50 per doz., $10.00 per 100.

NEW ROSES.—Madame Welch—Tea.
Mabel Morrison—H. P.
Queen of Beaders—Bourbon.
$1.00 EACH.

ROSES.—Cornelia Cook, Duchess of Edinburgh, Niphetos, Perle des Jardin, Perle de Lyon, Douglass, and La Sulphide, 30 cents each.

COLEUS.—All best varieties $1 per doz., $6 per 100.

VERBENAS.—50 best varieties, $3.00 per 100. Rooted cuttings, $1.00 per 100. $9 per 1,000.

Address
BELLEVUE NURSERY CO.,
P. O. Box 655. Paterson, N. J.

Patent Water-Proof Paper Fruit Packages, Baskets and Boxes.

The best and cheapest articles in which to carry Fruit yet discovered. For full particulars and prices send to

UNION BAG & PAPER CO.,
(Sole Owners,)
53 & 55 Michigan Av.,
Chicago, Ill.

☞ We will sell the right to manufacture under our Patents at very reasonable rates.

Bees Require Sweet

Flowers from July to Sept. **Clethra Alnifolia** blooms late, has the sweetest of White Flowers. It is entirely hardy, grows where corn will; described and illustrated in circular, sent free by mail. Also the Reading Nursery Catalogue, 50 varieties Evergreens 1 to 6 ft., Scotch Larch, White Ash, Cuthbert Raspberry, Large and Small Fruits, etc. Address **JACOB W. MANNING, Reading, Mass.**

Nymphæa Flava

(*Lutern*)—Beautiful Yellow Water-Lily. By mail, carefully packed, for 50c. each, or 5 for $1.00. Descriptive catalogues free.

ARNOLD PUETZ, Florist, P.O. box 677, Jacksonville, Fla.

Extra Peach and other fruit trees; Crescent Seedling Strawberry Plants *Pure* $3 per M. Millions of small Fruits and Trees. Price List free. Address J. PERKINS, Moorestown, N. J.

NEW AND RARE PLANTS CHEAP. SEND stamp for **Illustrated** Catalogue to
W. A. HARRETT, Dubuque, Iowa.

SNYDERS $3 to $15 per M. Great American, 30 cts. per doz., post-paid, other kinds lower. Lists free to all.
STEELE BROS., La Porte, Ind.

ROSES Delivered by Mail. 6 French Roses $1. *Send for Catalogue.* *Cumberland Nurseries.*

TUBEROSES Large and Sound, 8 for 50c. **H. S. RUPP,** Shiremanstown, Pa.

Stockbridge Manures

Originated by Prof. Stockbridge, Professor of Agriculture in the Mass. Agricultural College.

A special manure is made for each **FARM** and **GARDEN CROP,** containing the **Plant-Food** which each particular Plant requires. These manures were used on more than **25,000 acres in 1878,** and with Great Satisfaction.

Now is the time to make up your order for the STOCKBRIDGE MANURES for all crops, and to

TOP DRESS

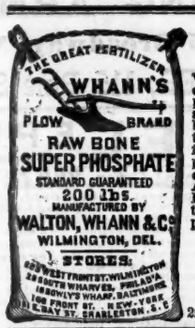
Your Winter Grain Fields, Grass Lands, and Pastures. The Stockbridge, applied as a top-dressing during this month and a part of next, on Winter Grain, will give most excellent results. Winter Grain which has suffered from the winter will also be greatly benefited. For top-dressing Grass, the Stockbridge has given universal satisfaction, producing from two to three tons to the acre. Remember it is free from weed seeds, and you can haul, at one two-horse load, enough to go over six or seven acres. It may be applied from now till early May, but those who used it early last season were enabled to cut a heavy crop in early June, and also obtained a good second crop before the August drouth set in.

PLANT CORN AND POTATOES on the STOCKBRIDGE MANURES, and thus make profitable crops on land that would otherwise be idle. Save weeds, save labor, and increase crops.

USE BOWKER'S PHOSPHATES to forward your crops and give them a vigorous start and carry to maturity.

It will pay, *Send for new pamphlet and price list, mailed free.*

BOWKER FERTILIZER CO.,
BOSTON, NEW YORK, and ROCHESTER.



ESTABLISHED 1861.

For the last ten years under the supervision of a Professor of Chemistry, whose whole time is given to our business. **All raw material,** as well as **finished products,** are carefully analyzed; under no other system can a reliable fertilizer be made. Each package bears a correct analysis of its **contents of plant-food,** which analysis **we guarantee to be true in every particular!** A long experience, complete works, and large business, enable us to buy raw materials and manufacture our goods, to the best advantage, so that we sell the **best quality of goods** at the **lowest possible price!** Our "Flow" fertilizer is a "complete manure," containing **every element required,** and in proper proportion, to produce **any crop,** and is especially noted for its **superior mechanical condition,** very **dry,** and finely pulverized, in **perfect** condition for broadcasting or drilling. Analyzes 2½@3¼ per cent Ammonia, 8@9 per cent Available Phosphoric Acid, 2@3 per cent Potash. Price, $40 per ton. Delivered on cars or vessel, in New York, Philadelphia, Wilmington, Del., or Baltimore, Nett Cash. When ordered in lots of one ton and over, a discount of five per cent will be allowed from this price.

WALTON, WHANN & CO.,
Wilmington, Del.

28 South Wharves, Phila.; 16 Bowley's Wharf, Baltimore; 40 S. Broad St., Atlanta, Ga.; 2nd St., below Poplar, Macon, Ga.

Genuine Peruvian Guano, No. 1 and Lobos brands, pure Ground Bone, Poudrette, and Super-Phosphate of Lime. Merchants and Farmers supplied at the very lowest price. Send for 1879 Pamphlet.

H. B. GRIFFING, 60 Courtlandt St., New York.

BONE DUST.

The Tried and Never Failing Land Fertilizer for all crops. No experiment necessary. It has proved its value by years of actual use all over the world. We can supply the best Bone Dust made. Bone for Chickens a specialty. Send for circular.

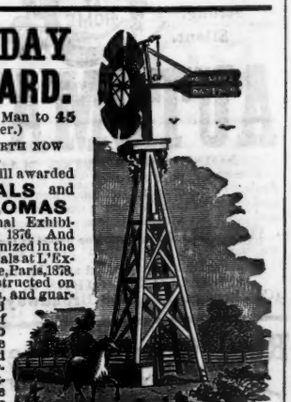
S. H. MORGAN & CO.,
Toledo, O.

HALLADAY STANDARD.

(17 sizes—from 1 Man to 45 Horse Power.)

$3,500,000 WORTH NOW IN USE.

The only wind-mill awarded **TWO MEDALS** and **TWO DIPLOMAS** at the International Exhibition, Philadelphia, 1876. And the only Mill recognized in the distribution of Medals at L'Exposition Universelle, Paris, 1878.



This mill is constructed on scientific principles, and guaranteed to do good work in any kind of wind. It is also guaranteed to be well made of good material; to be perfectly self-regulating; to possess more power; to be more reliable in all kinds of winds, than any other mill made, and further than this, it is **Guaranteed NOT TO BLOW DOWN.**

Send for **CATALOGUE "A"** and Price List.

U. S. WIND ENGINE & PUMP CO.,
BATAVIA, ILL.

Pure PREMIUM BONE

THE GREAT LAND RENEWER. The cheapest and best, because **pure,** natural ground bone. Thousands of recommendations by those who have tested its merits. All questions as to use answered free. Sold in any quantity. Address EXCELSIOR FERTILIZER Co., SALEM, OHIO.

CHAPMAN & VAN WYCK,
(Established 1849).
DEALERS IN
PERUVIAN Guano
EXCLUSIVELY,
170 Front Street,
New York.

MATFIELD FERTILIZER.

This is the only fertilizer professedly containing **all** the soil elements found in each crop. Prof. W. O. Atwater, of the Connecticut Agricultural Station, analyzed six of our different fertilizers, and found in every case, as we guaranteed, **that they contained a larger percentage of plant-food elements** than we claimed by the labels placed on each package. Send for circulars. Address

Matfield Fertilizer Co.,
13 Doane St., Boston, Mass.

Soluble Pacific Guano.

The Superior excellence of this Guano has been so successfully demonstrated during the past ten years in the Middle and Southern States, on cotton, corn, tobacco, sugar-cane and garden vegetables—the Company's sales have exceeded the enormous aggregate of 35,000 *tons in a single season*—that it is now offered for sale with entire confidence as to its merits. No fertilizer ever introduced in this country, has undergone severer tests, or come out of them with its character as a first-class, reliable fertilizer more thoroughly established. In consequence of the satisfactory results of these very complete tests, this Guano has acquired a reputation equal to that formerly enjoyed by Peruvian Guano. It is rich in **Bone Phosphate of Lime,** finely ground (a large proportion of which is immediately soluble), **Ammonia,** and **Potash,** besides other ingredients valuable as plant-food. Manufactured at the Company's works, Woods Holl, Mass., and Charleston, S. C., under the supervision of competent chemists.

Pacific Guano Co., Boston, Mass.

Winchester Repeating Fire Arms.

LARGE REDUCTION IN PRICES.

	Model '66.	*Model '73.*	*Model '76.*
Sporting Rifle, Octagon Barrel	$23.00	$27.00	$35.00
" " ½ " "	23.00	27.00	35.00
" " Round "	22.00	25.00	32.00
Carbine	20.00	24.00	27.00

☞ EVERY VARIETY OF METALLIC AMMUNITION AT THE LOWEST MARKET RATES. ☜

SEND FOR ILLUSTRATED PAMPHLET.

WINCHESTER REPEATING ARMS COMPANY,

New Haven, Conn., or 245 Broadway, New York.

Agent for the Pacific Coast, JOHN SKINKER, 115 Pine St., San Francisco, Cal.

MAYNARD ARMS.

CREEDMOOR,

MID-RANGE AND HUNTING RIFLES.

THE MAYNARD ARMS

Are the most perfect in workmanship as well as accuracy of any make in the world, particular attention being paid to the fine shooting, as well as the mechanical qualities of the arms. For full particulars and price list address

MASSACHUSETTS ARMS CO.,
Chicopee Falls, Mass.

NEW EDITION JUST ISSUED.

THE

Sportsman's Library

OF STANDARD BOOKS,

Containing Brief Descriptions of a large number of most interesting and valuable Books upon Out-door Sports and Amusements, and Illustrated with a great number of Spirited Engravings of Game Birds, Fish, Horses, etc., many of them Drawn from Life.

Should be in the hands of every sportsman; every one wishing to acquire the art of Shooting, or to obtain information regarding Game Birds, Fish, Horses, Guns, and Equipments. —*Hon. N. P. Stanton, President National Rifle Association.*

A handsome compilation, the demand for which is gratifying evidence of an increase of interest in manly pastimes. —*Col. Wm. C. Church, Editor Army and Navy Journal.*

A complete compendium. Contains all the best and reliable books on these interesting topics, also characteristics of birds, fishes, dogs, etc. Natural history also finds its place. —*Forest and Stream.*

A welcome and much needed publication, telling where to find good text books upon this or that sport.—*Geo. S. Schermerhorn, Jr., Secretary National Rifle Association.*

A very interesting compilation—meets a want that has been felt—as sportsmen and others can find enumerated and described in it the various books they may require.—*Spirit of the Times.*

All interested in sporting matters will be gratified by this publication.—*Maj. Henry Fulton, Captain American Team.*

Send two three-cent Postage Stamps for a Sample Copy.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

TELEPHONES.

For Business Uses.

Special Offer. OUR NEW IMPROVED DOUBLE COILED METALLIC TELEPHONE is **the finest in the world,** and the only completely satisfactory low priced instrument; with **Spring Call Attachment,** made by **practical machinists** on scientific principles; warranted to work **one mile,** unaffected by changes in the weather. We will send to one address **one sample set,** comprising two Telephones, two walnut holders, six copper bound insulators and 200 feet heavy wire, at **25 per cent. discount** from **regular rates,** which is **$3,** for the **$4.** Instruments. This offer is made for a limited time only, simply to introduce our instruments; they will soon be sufficiently well known to sell through the trade, and we shall then be obliged to strictly maintain the retail price. Any person of ordinary intelligence can put them up by following directions sent with each pair. We have sold during the last three months nearly **1000** of these instruments, and have **hundreds of testimonials** from all parts of the country. We **guarantee** all instruments sold. For any Telephone that fails to work, we will **refund the money** and pay all charges. Ask any Commercial Agency, and you will find we are good for all we agree to do. Postage 20c. Name this paper when you write. **Kent, Woodman & Co., 25 Congress St., Boston, Mass.**

Ladies Purchasing

CORSETS

SHOULD EXAMINE

Madam Foy's Improved

CORSET

SKIRT SUPPORTER

☞ **For Health, Comfort, and Elegance of Form, it has no rival,** and is really the most perfect Skirt-Supporting Corset made. For sale by all leading dealers. Manufactured by **FOY & HARMON,**
New Haven, Conn.

TILTON'S NEEDLE-WORK SERIES.

Art Embroidery and Plain Needle-work. Send for circular to S. W. TILTON & CO., Boston, Mass.

Best Sewing Machine in the World.

Beautiful, Durable, Strong, Silent.

Swift, Simple, Light, Easy.

AUTOMATIC

NOISELESS SEWING MACHINE.

The great popularity of this machine has induced dealers in common tension machines to claim automatic and other features belonging exclusively to us. Examine and judge for yourself before purchasing.

W. & C. Pat. Mar. 19, 1861. } Every genuine needle is thus stamped. Buy no other. Needles, &c., sent by mail.

Send for Illustrated Leaflet and Descriptive Circular.

WILLCOX & GIBBS S. M. CO.,
(Cor. Bond St.) **658 Broadway, New York.**

Real Good White Shirts

FOR 50 CENTS EACH.

"From the Work-room to the Wearer."

Two, or more, perfect fitting, open back, shield-shaped linen bosom, French yoke shirts, all ready to wash and wear, mailed post-paid, for **50** cents each. **One** sample shirt for 60 cents. Send size of collar worn and full address to

NEWARK SHIRT COMPANY,
104 Montclair Ave., Newark, N.J.

An Excellent Watch.

Stem-Winder and Stem-Setter.

ONLY $10!

We have so many inquiries from readers who wish to obtain a really good, reliable Time-keeper, but do not feel able to pay but a small price for one answering these requirements, that we have arranged to supply them. The watch has been thoroughly tested by several in our own office with most satisfactory results. It is a *Stem-Winder and Stem-Setter,* no key therefore being required for winding or moving the hands. The case is strong and neat-looking, heavily plated with nickel, which is not easily distinguished from silver, the face is protected by strong flat crystal, with beveled edges, and the dial is clear. The satisfactory record of these watches as time-keepers, proves their works to be well and carefully made. They are worth more for real service and reliability than many watches sold at several times the price at which these are offered, and to any one wanting a good watch for comparatively little money, can not fail to give satisfaction.

Price $10. Expressage paid by Receiver.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

PRICE, $8.00.

FOR MOWERS AND REAPERS

The only practical Sharpener in the market. Even bevels and perfect cutting edges insured. Saves three-fourths of the time and labor of grinding, and reduces wear and tear upon the Mowing Machine. Only one person required to operate it. It has received the highest award of the New England and other Agricultural Societies wherever exhibited, and is endorsed by hundreds of prominent farmers. A responsible party wanted *immediately* to manage the sale in every town. Send for Circular and terms.

WOOD MANUFACTURING CO.,
12 Front Street, Worcester, Mass.

FARM GRIST MILLS and Corn Shellers.

Every farmer should have them.

Over 20,000 in Use.

Every machine is guaranteed to give satisfaction, or no pay. Price of mills, $12; shellers, $5. Send for descriptive circulars and terms to agents.

LIVINGSTON & CO., Iron Founders, Pittsburg, Pa.

Gardner's Railway Pitching Apparatus.

Consisting of Carrier, Grappling Fork, Pulleys, and Hooks. For unloading Hay, Grain, Beans, Corn Stalks, loose or in bundles, etc. Can be used in any barn. Also, Improved Stacking Apparatus. Send for Circular, and get valuable information.

E. V. R. Gardner & Co.,
Johnson's, Orange Co., N. Y

The Anti-Friction Hay Carrier,

elevates perpendicularly, and conveys horizontally any desired distance. **Many Thousands in Use.** The cheapest, strongest, most convenient, and durable Carrier made.

THE NOYES GRAPPLE FORK handles fine, coarse, or loose hay; is cheaper than a harpoon, easy to handle, strong, durable, and guaranteed the best Horse Fork made.

Send for sheet containing 23 ENGRAVINGS AND DRAWINGS—designs for tracking and arranging barns, bill of lumber, and full details for making Field Stacking Frame, etc., etc.

U. S. Wind Engine & Pump Co., Batavia, Ill.

HARRISON'S MILLS,
NEWLY IMPROVED.

New Standard Flouring Mill. New Standard Corn Mill.

Capacity of 12-inch Mill, 2 to 12 bus. per hour; capacity of Light 20-inch Mill, 6 to 40 bus. per hour.

Wholesome Bread, Fine Flour, High Speed, Quick Work, and Economical Milling Fully Established. For illustrated catalogue, describing the Harrison System, Address Estate of

EDWARD HARRISON, New Haven, Conn.
(William A. Foskett, Administrator.)

CHALLENGE FEED MILLS.

Grinds three times as fast as any other mills. Always successful. Over 500 First Premiums and Medals. Over 15,000 in use. They do not clog or heat; grinds 60 bushels per hour. All successful Iron Feed Mills INFRINGING OUR PATENTS. Beware: Buy none but the best. Remember the Courts have sustained our Patents. Also the best Wind Mills, Corn Shellers, Horse Power Wood Saws, Fanning Mills, and Pumps. Address CHALLENGE MILL CO., Batavia, Ill.

Nichols, Shepard & Co.,

BATTLE CREEK, MICH.,

Makers of the Original and only Genuine "Vibrator" Threshers, Mounted Horse Powers, Steam Thresher Engines and Steam Outfits complete. Illustrated Circulars sent free.

We manufacture the old reliable **Stover**—the well tried, strong, durable, self-regulating, solid wheel **Wind Mill**, which took *the* Centennial Diploma, as well as a Medal. Others may talk, but we refer to the **Official** Centennial Report. Also the **Stover** $20.00 Oscillating Feed Grinder, (with O. E. Winger's late improvements), which is operated by 10 and 12 ft. Pumping Wind Mills—a novel and perfect Mill for grinding all kinds of grain for stock and horse use. Agents wanted everywhere. Branch factory at Greencastle, Pa.

Send for catalogue to STOVER WIND ENGINE CO.,
Freeport, Ill., U. S. A.

IRON SCREW WIND POWER,

With Corrugated Iron Fans.

The only Wind-mill using a propeller-shaped wheel, by means of which the sail does its proportion of work at every point. Has an open center, is Vaneless, Storm-proof, and Self-governing. The Motion is ALWAYS STEADY, the Speed being Governed by the lever rod, and the mill DOES NOT STOP OR RUN ANY FASTER, NO MATTER WHAT THE GALE IS. Send for Catalogue for full particulars. Address.

POWELL & DOUGLAS, Waukegan, Ill.

MYERS' Improved Wind-Mill.

Simple, durable, and efficient. Perfectly self-regulating, and the only Wind-Mill that stands on the derrick in perfect balance, in gear and out of gear. It is a solid Wheel-Mill, and is warranted to be well made and to stand the most violent storms. Every farmer, stock-raiser, and dairyman should have one for pumping water for stock, grinding feed, etc.

Send for Circular and Price-List.

Silver & Deming, Mfg. Co.,
Salem, Ohio.

10 FEET BANNER WIND MILL. $75

N. P. MIX,
Avenue, Ohio.

THE BEST CORN SHELLER MADE.

Adjustable for all sizes of corn. Buy the **Peerless Sheller.** The easiest operated, and most perfect working. Shells 60 *Bush. Ears per hour.* Separates corn from cobs and chaff, is turned and fed by one person. Address

A. P. DICKEY,
Racine, Wis.

WHAT AGENTS SAY of *O'Hara's Dollar Champion Corn-Sheller*:—"Easiest thing to sell I ever saw." "I shelled 6 bus. per hour." Sample mailed for 60c. W. ATLEE BURPEE & Co., 221 Church St., Phila.

Frederick's Pat. Equalizer.

A perfect double tree, a perfect triple tree, a perfect two and three horse stretcher. Costs less than to iron the common double tree. Can't get a farmer to do without one. Weighs only 20 lbs. Can be attached to anything with or without a tongue. Ask your agricultural dealer about it, or send 3 cent stamp for testimonial.

M. E. BUNGER & CO.,
Manufacturers, Indianapolis, Ind.

J. LLOYD HAIGH,
Manufacturer of

Steel and Iron Wire, and Wire Rope

Of Every Description.

Galvanized Wire Clothes-line, Fence and Vineyard Wire, and Fence Staples.

Price Lists with full particulars on application.

Offices No. 81 John St., New York City.
P. O. BOX 2,339.

SPRING STEEL TOOTH

HORSE RAKES.

Highest Award at the Centennial and Vienna Exhibitions. Medal of Honor

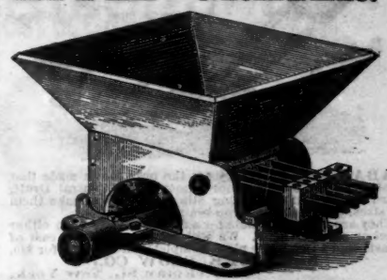
CHAMPIONS OF THE WORLD.

No Cogs or Ratchets, Easiest Hand or Horse Dumping. Purchasers prefer them to all others for Durability and Efficiency. Fully guaranteed; so no risk is incurred in ordering from us. Responsible Agents wanted where we have none.

Send Stamp for Catalogues of RAKES, THRESHING MACHINES, &c.

WHEELER & MELICK CO.,
ALBANY, N. Y.

APPLE GRATER.



This Grater is first-class in every respect; has iron cylinder, iron frame, steel knives, adjustable concaves, and is not surpassed for quantity or quality of work.

PRICE REDUCED TO $40.

For catalogue of cider machinery and other information valuable to cider-makers, address

BOOMER & BOSCHERT PRESS CO.,
Syracuse, N. Y.

Ragan's Cider Presses

Capacity 25 to 30 barrels per day; easily worked; very compact; of immense power. Not liable to get out of order. Gives universal satisfaction. Manufactured only by

EWALD OVER,
INDIANAPOLIS, IND.
(Send for Circular.)

HUTCHINSON'S PATENT ADJUSTABLE HARROW. Farm rights, with instructions, $2.00. Complete harrows shipped to any address, $12.00. Stamp for circular.

S. HUTCHINSON, Griggsville, Pike Co., Ill.

STEAM ENGINES,

A. B. FARQUHAR, York, Pa.,

Cheapest and best for all purposes—simple, strong, and durable. Also *Traction Engines* for common roads.

SAW, GRIST AND RICE MILLS, GINS, PRESSES AND MACHINERY generally. Inquiries promptly answered.

Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 ready for road. Boiler 4 inches larger than cider makers.

Send for Catalogue.

The Farquhar Separator

(Warranted)

Penna. Agricultural Works, York, Pa.

Lightest draft, most durable, simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.

Steel Engines, Horse Powers and Threshers, all kinds of Agricultural Machinery.

Send for Illustrated Catalogue.
Address A. B. Farquhar, York, Pa.

Thresher and Engine for $725.

We furnish the Shaker Separator and the **Queen City Portable Engine for $725.** This is the best and cheapest outfit of its class ever offered. We warrant it to thresh and clean 30 to 50 bushels wheat per hour. Send for descriptive circular.

BLYMYER MANUFACTURING CO., Cincinnati, O.
Steam Engines, Sugar Machinery, Bells.

CENTENNIAL AND GRAND PARIS WORLD FAIR PRIZES AND
ALL THE U.S. STATE FAIRS, PREMIUMS IN 1877 & 78.
PRICE
$350
FITS FROM 10 TO 18
STONES IN A CAR.
REQUIRES LESS HELP.
PRICE
$175
AND RAKES TWICE AS FAST AS ANY OTHER PRESS.
THE RAKE IS PATENTED AND
ADDRESS, FOR CIRCULAR,
PARKHURST, FREDERICK, & CO. SALEM, OHIO.

FELT CARPETINGS 20 to 45 cts. per yard. FELT CEILING for rooms in place of Plaster. FELT ROOFING and SIDING. For circular and Sample address C. J. FAY, Camden, N. Jersey.

ADAMANT PLOWS are the only plows made that contain all the modern improvements, viz., Central Draft, Hard Metal, Self-Sharpening Slip Shares. We make them all sizes, both wood and iron beam.

They are more profitable for a farmer to use than either steel or soft cast iron. We will deliver anywhere east of Mississippi a two-horse plow, complete, and extras, for $16.

NEW YORK PLOW CO.,
55 Beekman St., New York.

The Gale Chilled Plow

is the *best plow in the world* and was awarded the **Gold Medal** at Paris Exposition, **187 Other Plows** competing. For circulars, apply to

Gale Manufacturing Co., Albion, Michigan.

SYRACUSE CHILLED PLOW

Sample Plows delivered free of freight on receipt of price.

Price, Full Rigged, $16.

THE SYRACUSE CHILLED PLOW CO.

have enlarged the capacity of their works *three-fold*, in order to supply the demand for the year 1879.

THEY MAKE THE

BEST CHILLED PLOW

THE WORLD HAS EVER SEEN.

IT IS LIGHTER OF DRAFT.
IT IS MORE PERFECT IN SHAPE.
IT IS MORE DURABLE.
IT CLEANS IN EVERY SOIL WHERE OTHER PLOWS FAIL.
NO PLOW SO WELL PREPARES THE SOIL FOR A CROP.
THE PECULIAR WAY IT PULVERIZES THE SOIL IS ONE OF ITS GREAT EXCELLENCIES OVER ANY OTHER PLOW.
IT IS MADE IN DIFFERENT STYLES—ONE-HORSE, TWO-HORSE, OR THREE-HORSE.

Every Plow is Guaranteed under the Seal of the Company.

BEWARE OF COUNTERFEITS.

The reputation of the Syracuse Chilled Plow has induced unprincipled manufacturers to palm off on the farmers plows that they call *chilled*, which are, in fact, nothing but common plows, with the word "chilled" painted or branded thereon.

The SYRACUSE CHILLED PLOW has been made but two years and a half, and in that time

NEARLY 35,000 HAVE BEEN SOLD.

No other new style of Plow ever sold over Six Thousand in the same length of time.

Reference: EVERY FARMER THAT HAS TRIED ONE.

ADDRESS

Syracuse Chilled Plow Co.,
SYRACUSE, N. Y.

This Plow contains the most remarkable improvements ever made in Swivel Plows. It is easy to handle, with **Shifting Handles**, which enables the operator to walk with both feet in the furrow. Light to draw, firm, strong, and durable. Constructed of atent Hard Metal, which is as strong and will scour equal to steel. We also make it of charcoal iron, at a less price. THE BELCHER & TAYLOR AG'L TOOL CO., Chicopee Falls, Mass.

Brick and Tile Machines.

A great variety, adapted to the wants of all, or made to order with special reference to location and clay.

Estimates given of works, construction of kilns, or samples of clay tested. For circulars address

J. W. PENFIELD, Willoughby, O.

THE WESTINGHOUSE

Threshing Machines, Engines, and Horse Powers.

Improvements in Threshers render them the most complete and effective machines in the market. Engine and Boiler of novel design. Light, Economical, and Powerful. Boiler Shell upright; tubes horizontal; safe as regards sparks. Horse-Powers of both Lever and Endless Chain styles, all sizes. SEND FOR CIRCULARS. **G. WESTINGHOUSE & CO., Schenectady, N. Y.**

1,000,000

FARMERS WANTED

To try the Celebrated

Dexter Spring.

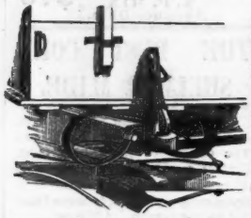
The EASIEST, CHEAPEST and MOST DURABLE CARRIAGE SPRING IN USE.

If there is no agent or dealer in your neighborhood, we will send complete set of Springs to you direct, at a very low price *for cash*. Every Spring fully warranted to be as represented. Full particulars, Circulars, &c., furnished free. Address **DEXTER SPRING CO., Hulton, Pa.**

SOMETHING NEW!

PULLIAM'S PATENT

BOLSTER SPRINGS for FARM WAGONS.



This new and valuable device is suited to wagons of any size—made of the best steel and warranted—are attached by four bolts through the bed—can be put on by any person. They remain on the wagon for all uses, and work equally well whether with empty or loaded wagon. There is no use for a spring seat—they make a comfortable spring wagon out of a farm wagon—and save largely in wear and tear. We Want Agents Everywhere.

SEMPLE & BIRGE M'F'G CO., St. Louis, Mo.
S. L. ALLEN & Co., 239 Market St., Phila., General Agents.

The FEARLESS.

Stands unequaled for ease of team, the Horse-Power runs, as shown by the records, with **more than one-third less friction than any other.** The only machine awarded a

CENTENNIAL MEDAL

on both Horse-Power and Thresher and Cleaner, at the Centennial Exhibition, as shown by Official Report, which says: **"For special features in the Power to secure light running and minimum friction. For the ingenious form of the Straw Shakers, which insure the proper agitation to separate the grain from the straw."** For Catalogue, Price-List, and full report of trial, address

MINARD HARDER, Cobleskill, Schoharie Co., N. Y.

Union Railway Horse Power.

AND PREMIUM THRESHER.

This very superior power produces much more power with far

LESS ELEVATION

than other railway powers. Send for descriptive circular.

WM. L. BOYER & BRO.,
2,101 Germantown Ave., Philadelphia, Pa.

1879. LEVEL TREAD HORSE POWERS.

Awarded a MEDAL and DIPLOMA OF HONOR, at the International Exposition

HEEBNER'S IMPROVED

Level Tread Railway Horse Power and Speed Regulator.

Heebner's Improved Threshing Machines. Send for Illustrated Circulars to

HEEBNER & SONS, Lansdale, Mont. Co., Pa.

La Dows Jointed Pulverizing & Smoothing DISC HARROW.

Light, Simple,

Durable & Flexible.

Being jointed in the center, is adapted to both smooth and uneven surfaces. Acknowledged the best of the kind, and will pulverize and cover seed better in one operation, than going over twice with others. Made with both Chilled Metal and Cast Steel Discs polished. Send for circular and price list. Manufactured by

WHEELER & MELICK CO.,
Albany, N. Y., for the United States, except New England.
EVERETT & SMALL, Boston, Mass.,
Manufacturers for the New England States.

Montgomery's Improved Rockaway Fan.

222 First Premiums. 15 Silver Medals. Gold Medal at Md. Institute in 1878, and 15 First Premiums at other Fairs.

No good Farmer can afford to be without one of these Fans! This universally known Fan has been victorious in every contest, and has the approval of thousands of Farmers all over this country. It is the best and cheapest Fan made for the farmer and planter. It is the only Fan that will effectually take out of wheat the great Virginia trouble "Partridge Pea." Prices reduced. Send for circulars and price lists to the manufacturers,

DORSEY, MOORE & CO.,
68 S. Calvert St., Baltimore, Md.
Manufacturers and Dealers in Standard Goods, Gen'l Agts. for **Cornell Shellers, Big Giant Corn and Cob Mills, Studebaker Wagons, &c.**

DAY'S IMPROVED $60

AUTOMATIC INCUBATOR.

Simplest and Best. Hatches and Rears the Best Chicks. Best possible Indorsements.

Address for Circulars, &c.,

DAY BROS. & CO.,
92 Linden Avenue, Baltimore, Md., U. S. A.

The CENTENNIAL IRON-CLAD is the

INCUBATOR

for the Farmer, Fancier and Poultry Breeder, because it is simple, easily understood, and managed; needs little care; is perfectly self-regulating, and hatches from 80 to 90 per cent of the eggs. Send 3-cent stamp for Illustrated Circular, and state where you saw this. **A. M. HALSTED,**
P. O. Box 28 **Rye, N. Y.**

Send to GEO. W. SIMMONS,

Manufacturer and Dealer in all kinds of **BEE KEEPER'S SUPPLIES, Newark, Delaware,** for Price-List of Bee Hives, Extractors, Veils, Queens, &c., &c.

THE POULTRY MONTHLY, a large, new, handsomely illustrated monthly, devoted to Poultry, Pigeons, Dogs, Rabbits, and other pets. Every specialty treated practically and scientifically. J. F. FERRIS, Editor, aided by a score of the best writers in the country. 32 large quarto pages, printed on beautiful tinted book paper. Subscription only *One Dollar per year!* Sample copies, twelve cents. Advertising, ten cents per line. Address, **FERRIS PUBLISHING CO., Albany, N. Y.**

Patent Concave Ox-Shoes.

The only forged ox-shoe made with *concavity* to fit hoof, and the best and cheapest.

GREENFIELD TOOL CO., Greenfield, Mass.

BIG PAY.—With Stencil Outfits. What costs 4 cts. sells rapidly for 50 cts. Catalogue free.
S. M. SPENCER, 112 Washington St., Boston, Mass.

A NEW BOOK ON PLYMOUTH ROCKS.

This Work contains an account of the origin and history of the Plymouth Rock Fowls to the present day, including the IMPROVED STRAIN, together with

Rules for the Specific Mating, Breeding, Care and Management of the Same.

No Breeder of Poultry should be without it. The scope of this work renders it an admirable TEXT-BOOK for the AMATEUR. Farmers cannot fail to profit by it, and by following its directions can breed and rear PLYMOUTH ROCKS successfully.

PRICE 75 CENTS.

F. H. CORBIN, Newington Junc., Conn.

THE "PERFECTION"

MILKING TUBES.

Are *unlike* and *excel* all others. Are all fine metal, *smooth as glass*. Are so made as to *stop air from entering the bag*, the *defect* in all other tubes. For use in Warted, Chapped, Torn, and other Sore Teats. "It is *particularly* recommended." Milks easy, quick, dry, and cleanly. *A mercy to Cows*, and *invaluable* to owners. Price $2, by mail. Address with stamp for particulars,

C. VAN HOUSEN, 34 Park Row, N. Y. C.

Wilcox Patent Cow Fetter.

A perfect preventative from kicking while milking. Also prevents switching the tail. Every cow owner should have one, as it is the *very* best. Price $3.00 delivered. Sent by express C.O.D. If not satisfactory return, and money will be refunded. Send for circular.

WILCOX BROTHERS, 97 Elm St., Hartford, Conn.

"We have tried all devices at times, and yours is the only one proving perfectly effectual.

T. S. GOLD, West Cornwall, Conn.,
Secretary Conn. Board of Agriculture."

ROCK'S

IMPROVED TETHER OR PICKET STAKE,

with combination swivel, warranted not to wind up or foul the chain or rope, the best ever invented for tethering cows, Horses, or other animals in pasture. No fences needed, all the waste grass utilized. Send for circular and information how to tie and what to tie with. Address

EUGENE ROCK,
Glen Head, Queens Co., N. Y.

JERSEY RED SWINE. PIGS NOW READY to ship. Catalogue free.

JOHN S. COLLINS, Moorestown, N. J.

Lewis' Lancashire Swine.

Have No More Hog Cholera!

These swine have taken first premiums in England and this country. White in color, well haired, very hardy, healthy, small waste, easily fattened, very prolific, large size. Send for circular.

W. G. LEWIS,
Framingham, Mass.

☞ **1517 Famous Ohio Improved Chesters**

sold for breeders, in one year. The dark hog has been in great demand, but there is a reaction. As a result, the following is a sample of what we are receiving from various parts of the country:—"Ohioville, Pa., Jan. 3d, 1879.—Mr. L. B. Silver, Cleveland, O.—Sir: Send price of '*Ohio Improved Chesters*.' I want one or two pairs of pigs this spring. I think your breed of swine will take well here now. The people are tired of black hogs. Yours, R. D. Dawson."

Send stamp for price of pigs and fancy poultry.

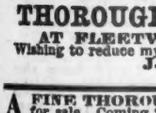
Address L. B. SILVER, Cleveland, O.

HEAVY-WEIGHT SWINE!

JERSEY REDS—famous for heaviest weights.

☞ Send for **The Illustrated Farm Annual** of Blooded Stock, Seeds, Poultry, Dogs, etc. Address W. ATLEE BURPEE & CO., 221 Church St., Philada.

VERY CHOICE MAGIE or POLAND CHINA PIGS for Sale (Magie's stock). Pigs 2 to 3 months old at reasonable rates. Also a few choice Boars, 6 to 8 mo. old, at $25 each. Address W. A. & C. A. REED, Orangeville, Trumbull Co., O., U.S.A., Breeders, Shippers and Exporters of this, the *best* and *most profitable Breed of Swine known*.



FARMER'S MAP 19 x 25, FREE!

Gives number Farm Animals each State, and how to mark. Address

R. W. HILL & CO., Decatur, Ill.

CEDAR MOUND STOCK FARM,

Importer and Breeder of Herd Registered Jersey Cattle and Berkshire Swine. G. F. MILLER, Cedar Rapids, Iowa.

THOROUGHBRED HORSES

AT FLEETWOOD STOCK FARM.

Wishing to reduce my stock, I will sell at reduced prices.

J. W. HUNT REYNOLDS,
Frankfort, Ky.

A FINE THOROUGHBRED JERSEY BULL for sale. Coming 3 years. Color, dark-fawn. Price, $50. Also 2 Bull Calves 8 months old. Price $60.00 each; all of good pedigree. Address

J. COBB, Box 178, Stockbridge, Mass.

CHOICE AYRSHIRE HEIFERS & HEIFER CALVES, with perfect pedigrees. Prices reasonable. Also Brown Leghorn Fowls; Pekin Ducks and Brown Leghorn eggs, $1.50 per doz. J. ANDREW CASTERLINE, Dover, N. J.

Lt. Brahma, P. Rocks, B. Leghorn, W. Leghorn, and P. Cochins. Eggs $1.00 per 13.

J. SKILTON, Box 428, Reading, Mass.

SELL SO-DO-I LIGHT BRAHMA EGGS from my Prize, Thoroughbred Stock, three strains, $3 for 13; Pure Buff Cochin, $3 for $13, $5 for 26; securely and neatly packed in handsome baskets; FORTY PRIZES in three years. FOWLS always for sale; write for what you want. Please say where you saw this. C. W. PIERCE, **FOR HATCHING.**

4,007 Prairie Avenue, Chicago, Ills.

OUR CANARIES,

AND OTHER PET BIRDS,

How to MATE, KEEP, FEED, and BREED THEM.

By GEO. P. BURNHAM.

OUT THIS MONTH. Elegantly illustrated with **50 Fine Engravings** of all sorts of Caged Birds—and a beautiful, life-size **Chromo Frontispiece** of the GERMAN CANARY, faithfully colored. A chapter on the DISEASE of Pet Birds, and how to cure them, concludes this volume. Price only **50 cents**, post-paid. Address,

Box 131, MELROSE, MASS.

EGGS FOR HATCHING

From high-class poultry; Light Brahmas, weighing 26 lbs. a pair at 10 months old; Brown Leghorns and Rouen Ducks, all selected and mated with care, $1.50 per 13—52 eggs for $4.00. No circulars.

JOEL BRUNNER, Zionsville, Lehigh Co., Pa.

EGGS FOR HATCHING.

Magrane's Light Brahmas: also Dark Brahmas. Partridge Cochins, Houdans, and White Leghorns. **$3 per 13**, carefully packed in new baskets, safe any distance. Stock unequalled. Purity and quality positively guaranteed. **Magrane & Fairservice**, 104 Montclair Av., Newark, N. J.

EGGS FOR HATCHING.

Plymouth Rocks and Light Brahmas, $1.50 for 13. Imp. Black Turkeys, $5 for 13. *Carefully packed at express.* Having at much expense lately renewed my P.R.'s from V. C. Gilman's and F. H. Corbins, and L.B.'s from G. S. Josselyn's and other strains, *I deem them good as can be got.* F. C. BIDDLE, Chadd's Ford, Pa.

EGGS.—EGGS.—EGGS.

For Hatching. 15 varieties of choicest Fowls and Ducks. "Low Prices and Best of Stock," my motto. Send stamp for Spring Circulars, with careful illustrations of all my stock. Address, A. M. CAREY, Selinsgrove, Penn.

EGGS for hatching. **Plymouth Rock** and **American Sebright**; stock first-class. Prices, $2.00 for 13.

WILSON R. BALLINTINE, Scottsville, Monroe Co., N. Y.

"White Leghorn's Eggs"

From as fine stock as any in the country; $2.00 per dozen. Shall breed from 3 yards this season.

No. 1 will have a cock that has scored 93.
No. 2, a cock that has scored 91, by Felch.
No. 3, a cockerel that has scored 95, by Bacon.
Took Silver and Bronze Medal at Hartford, 1st at Providence, this season. Address, **Eugene B. Pendleton, Westerly, R. I.**

EGGS. EGGS FOR HATCHING. From pure-bred stock. Partridge Cochins, Plymouth Rocks, Houdans, Black Breasted Red Games, White and Brown Leghorns, Golden Penciled Hamburgs, Pekin and Rouen Ducks. Eggs from any variety, $2.00 for thirteen, $3.00 for twenty-six. A. S. BEEKMAN, South Branch, N. J.

EGGS FOR HATCHING, $2 per sitting. P. Rocks, W. Leghorns, W. F. B. Spanish, Lt. Brahmas, B. B. R. Games. Send 3c. stamp for descriptive circular. LOUIS ANDERSON, Flemington, N. J.

Eggs for Hatching.—Plymouth Rocks, $1.50 per 13; White Leghorns, $1.50 per 13. Illustrated Circulars free. Address J. EDWARDS & CO., P. O. Box 21, East Orange, N. J.

EGGS for hatching from highest class Birds. Best strains. Circulars. Franklin Poultry Yards (limited). **NELSON & SEIBERT, Chambersburg, Pa.**

PLYMOUTH ROCKS, White and Brown Leghorns. Eggs $1 per 13. Address, F. A. JOY, **Johnstown, Cambria Co., Pa.**

EGGS FOR HATCHING Plymouth Rocks, Dark Brahmas, Buff Cochins, Brown Leghorns. Prices reasonable. Circulars. CHAS. FELDMAN, Greencastle, Penn.

GAME FOWL. SPORTING DOGS, and Cattle, supplied by J. C. COOPER, Cooper Hill, Limerick, Ireland.

HIGHEST CLASS.

Light and Dark Brahmas, Partridge, White Cochins, White and Brown Leghorns, Plymouth Rocks, Houdans, Golden Sebright, and B. B. R. G. Bantams.—Pekin, Aylesbury, and Rouen Ducks.—My stock is unsurpassed. My location is central, and desirable for Eastern, Western, Southern, and Canada customers. My establishment is largest in the world. Prices moderate. Eggs, $3 per 13, $5 per 26. Send for new, novel, practical, and useful circular.

GEO. S. JOSSELYN, Fredonia, N. Y.

New England Stock and Poultry Farm.

Having had 8 years experience in the breeding of Pure Premium Plymouth Rocks, I can recommend them to be the best Fowls in the world for all purposes. Eggs for Hatching at $1.25 per 14, or $2.00 for 30, and 100 for $5, carefully packed and warranted fresh. Remit money through P. O. Order or registered letter. G. H. BATHBUN, Willimantic, Conn.

Best & Cheapest.

Buchan's Cresylic Sheep Dip prevents and cures the scab and all parasitic diseases of the skin.

Buchan's Cresylic Ointment is CERTAIN DEATH to the Screw-worm or Grub.

For further particulars, send for price lists and circulars to **KIDDER & LAIRD, 83 John St., New York.**

POULTRY AND PIGEONS

C. E. L. HAYWARD, Peterboro', N. H.

Importer and Breeder. All kinds of

LAND AND WATER FOWLS,

Is receiving stock from Europe monthly. Among the kinds lately imported are Langshans, Buff Polish, Minorcas, Pekin Bantams, Japanese Bantams, Golden Pheasants, Silver Pheasants, Ring Neck Pheasants, Albino Pheasants, and other kinds.

Mr. Hayward has the largest variety of fancy Poultry and Pigeons in America, and has won more premiums than any other Breeder in America in the past three years.

If you are in want of any kind of Poultry, Pigeons, or eggs for hatching, send stamp for list of upwards of 300 varieties, for sale by Mr. Hayward.

AMERICAN Cattle Food Co.,

DEALERS IN

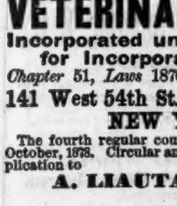
COTTON SEED OIL MEAL,

PURE AND UNADULTERATED.

Shipments made to all sections of the Country at the lowest market rates.

SEND ADDRESS FOR CIRCULAR AND PRICE LIST.
STATE QUANTITY DESIRED.

OFFICE, 142 Pearl St., Room 17, N. Y.



NEW STEEL HORSE SHOE,

With Level Spring Platform—Continuous Calk. The best in the world. Cures Tender and Contracted Feet, Corns, Interfering, Quarter-crack Lameness, and all evils resulting from the use of the common shoe. Responsible men can make money selling this Shoe. Send for pamphlet. Trial set with nails, $1.00. To measure, place foot on paper, and draw pencil around.

The JOHN D. BILLINGS PATENT HORSE SHOE COMPANY
265 Broadway, New York.

AMERICAN VETERINARY COLLEGE.

Incorporated under the General Law for Incorporation of Colleges,

Chapter 51, *Laws* 1870 — *Chapter* 319, *Laws* 1848.

141 West 54th St., betw. 6th & 7th Avs., NEW YORK CITY.

The fourth regular course of lectures will commence in October, 1878. Circular and information can be had on application to

A. LIAUTARD, M.D.V.S.,
Dean of the Faculty.

Thoroughbred and Grade Jerseys.

I offer for sale, at reasonable prices for the quality, 25 head of thoroughbred and grade Jersey Heifers, and Cows of all ages. Also 10 thoroughbred Jersey Bulls, from 3 months to 4 years of age. My thoroughbreds are not equalled by any of the late importations, and my grades recommend themselves by their production. I refer to every individual who ever purchased an animal of me during the 30 years I have bred this stock. All animals sold by me are guaranteed as represented. For terms, apply in person to

THOMAS FITCH, New London, Conn.

Hambletonian Horses and Colts also for sale; best blood.

RIVERSIDE FARM.—Jerseys, Berkshires, and Cotswolds imported, bred, and for sale. Bronze Turkeys, Pekin Ducks, and Light Brahmas. Send for catalogue.

C. P. MATTOCKS, Portland, Me.

USE THE VERY BEST.

"Trade R Mark."

ANNATTO.

L. E. RANSOM, 34 Maiden Lane, N. Y. City.

COOLEY CREAMER.

Supersedes large and small pans for setting milk.

It requires no milk-room.

It requires capacity for one milking only.

Impure air, dust, or flies, can not reach milk set in it.

It makes more butter, because it raises all of the cream, and the quantity is never lessened by unfavorable weather.

It makes better butter. It requires less labor. It is cheaper.

Butter made by this process took the **Highest Award** at the **International Dairy Fair**—and brings the highest prices in all the great markets.

Send stamp for Dairyman to

VT. FARM MACHINE CO.,
Bellows Falls, Vt.

A PERFECT BUTTER-SALTING SCALE.

Every pound of butter salted alike. Salts from three-quarters to one and a quarter ounces to one pound of butter. No MISTAKES. Will WEIGH ANY ARTICLE from ¼ oz. to 64 lbs. No Dairyman or Butter-Maker should be without one of these SCALES. Warranted to give satisfaction, or money refunded.

Sent C. O. D., or on receipt of price—**$5.** Send stamp for Circulars. Address BUNNELL & BROWN, Guilford, Chenango Co., N. Y.

THE Perfect Milk Pail

Preserves Milk from specks and lumps of **dirt** and **dung**, and from **the atmosphere** of the stable, which give the so-called **animal odors.** A seat for the milker; holds 14 qts.; can not be stepped in nor kicked over by the cow; the milk is strained before entering it. If you desire purer, more wholesome and fragrant milk, **cream**, and butter, than ever before, send $2.00 for a pail, or get circulars and induce the store-keeper to order a dozen. Address

DAIRY SUPPLY CO.,
P. O. Box 416. 15 Murray St., New York.

BUTTER AND CHEESE MAKERS use the **Natural Butter Color**; it gives the June color to your Butter in winter, is harmless as salt, and adds from 5 to 10 cents per pound to its market value. Our Cheese Color is sold by the gallon, and we guarantee it. Write for Price-List.

R. S. WHITE & CO.,
Fort Atkinson, Wis.

Perfection in Ladders.

The EMMERT COMBINED Step and Extension Ladder.

It combines all the good points in others without any of their defects. It is Light, Strong, Durable, Easily Adjusted and locked in any position or place, either as a Step or Extension Ladder. Write for Circulars and Price List for the best **Churns** and **Dog Powers** in the World.

A new Treatise on Butter-making free.

W. P. EMMERT,
Freeport, Ill.

LAWRENCE & TAYLOR,
76 Aldersgate Street, London, E. C.,
ENGLAND,

receive Consignments of dairy and other agricultural Produce for sale in the **largest and best Market in the World.**

Commission:—For consignments under £30—4 per cent.
" " " £100—3 per cent.
" " over £100—2 per cent.

Freight, etc., etc., paid free of charge for interest.

Money Advanced on Consignments Without Interest.

Account sales and cash promptly remitted.

Bankers, National Provincial Bank of England.

Telegraph Address—TAYRENCE, LONDON.

REGALIN PRESERVING POWDER,
FOR EGGS, BUTTER, FRESH OR SALTED MEAT, Etc.

Perfectly tasteless, and preserves the color. Keeps the brine clear, free from scum, and brine and meat from souring. So salted, it is in taste and flavor much sweeter than ordinary. Price 50 cts. per Box. Sent by mail to any address, postage prepaid. Agents wanted.

C. AM ENDE, Hoboken, N. J.

PIANO Another **battle** on **high prices** **ORGAN**
War with **monopolists** renewed
See Beatty's latest Newspaper for full reply **sent free.**
Before buying PIANO or **ORGAN,** read my latest circular. Beatty's celebrated Pianos & Organs, beautiful Instruments! Challenge comparison! Rivals are jealous of my success! Most successful house in America!
Rosewood Pianos, **$135,** 16 stop Church Organs, **$115.**
WAR tremendous bargains now ready. Address **WAR**
Daniel F. Beatty, Washington, N. J., U. S. A.

"GET THE BEST."

The Genuine Blanchard Churn.

Five Sizes Made for Family Use. They Continue to be the Standard Churns of the Country.

The Blanchard Cylindrical Factory Churn.

FOUR SIZES MADE FOR FACTORY USE.

They are made of perfect stock, and the best workmanship, and are strong, simple, efficient, convenient and durable.

The Blanchard Power Butter-Worker.

A NEW AND IMPORTANT INVENTION.

On receiving the retail price ($20), we will send one of these Power Butter-Workers to any responsible party, and *guarantee satisfaction*, or the money will be refunded.

It is a surprise and delight to see how the hardest part of dairy labor is, by this ingenious machine, made so simple and easy that a child fourteen years old can do it all.

This is the *only* Butter-Worker made which can be successfully operated with power. It will save its cost every season.

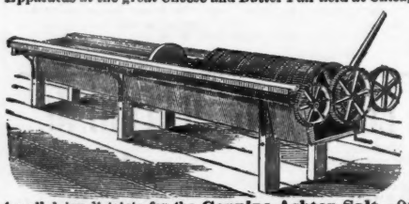
Address the Inventors and Sole Manufacturers,

PORTER BLANCHARD'S SONS, Concord, N. H.

The above goods may be obtained of any dealer in *really first-class* Dairy Implements in the United States.

CHEESE AND BUTTER MAKERS' SUPPLIES
And Complete MANUFACTURING OUTFITS,
Furnished by WHITMAN & BURRELL, Little Falls, N. Y.
PRICES LOWER THAN EVER.

Cash Premiums $335. Greater number **First Prizes** and **Diplomas** received at the recent **International Dairy Fair,** New York, than by any other person or firm, which included **Creamery Apparatus,** consisting of **New Economizer Boiler** and **Engine—Creamer**—Cheese Vat to make up the skimmed milk—Hubbell Gang Press and Hoops—Churn—Butter Worker, &c., &c. Also received highest Awards and Cash Prizes for best Butter and Cheese Apparatus at the great Cheese and Butter Fair held at Chicago, Ills.



We are sole manufacturers of the **HUBBELL GANG CHEESE PRESS,** which took the **first prize** at these fairs. This is the only Press that has right to use the **bandager, all others** subject to **royalty** of **$4.00** per hoop.

ECONOMIZER BOILERS—with and without Engines—both portable and stationary, will make **more steam from less fuel** than any other Horizontal Boilers built. **Price very low.**

New Patent Refrigerator Vats, or Creamer, for setting milk for cream and afterward making cheese in same vat, received **highest** award at International Dairy Fair.

Latest **Improved Patent Knife Curd Mill** is recommended by the best cheese makers in the land.

We are first hands, with greatly reduced prices also, for **Rennets, Annattoine, Annatto, Bandage, Scale Boards, Liquid Rennet Extract, &c**—General Agents for all dairy districts for the **Genuine Ashton Salt.**—ORDER LAPHAM'S SEAMLESS CHEESE CLOTH. LESS EXPENSIVE—NO WASTE—saves trouble and time of making up the bandage. Seven sizes, for 13 inch to 16 inch cheese. Samples by mail.

All correspondence answered promptly. Circulars and prices furnished freely.

Self-heating Vats at prices **less than ever before.**

LILLY'S PATENT BUTTER-WORKER

is now acknowledged to be the only complete and effective self-feeding machine in the market, mixing the salt and imitating hand-work to perfection. Send for circular and see the list of prominent dairymen now using them.

C. H. R. TRIEBELS,
316 Race St., Phila., Pa.

BUTTER WORKER.

The most effective, simple and convenient yet invented. **Works 30 lbs.** *in less than* **5 minutes,** *thoroughly working out buttermilk and mixing the salt.* **AGENTS WANTED.** Send for circular.

A. H. REID,
6 N. Eighteenth St., Philadelphia Pa.

Agricultural
Insurance Company, of Watertown, N. Y.

Capital $200,000.00. Net Surplus, $216,645.62. Total assets for the security of Policy holders, January 1st, 1879, $1,150,063.99. Insures only Farm Property and Residences against fire and lightning. **Takes no business risks.**

USE LEAMON'S DYES

WARRANTED *best and cheapest for Family and Fancy Dyeing.* Dresses, Coats, Ribbons, Ties, Feathers, anything **colored any shade.** Any one can use them. *The Black and Brown are best dyes known.* **Splendid INK made very cheap. 12 colors.** Sold by druggists, or sent by mail. Large size, **25c.**; small size, **15c.** Send for Dye Book and beautiful samples **free.**

WELLS, RICHARDSON & CO., Proprs., Burlington, Vt.

GARDEN ENGINE AND FIRE EXTINGUISHER. For Washing Windows, Carriages, etc. Protects Buildings from Fire and Trees, Vines, etc., from Insects. Throws water 50 feet. Easily carried. No Dwelling, Country Home, or Factory should be without the Fountain Pump. Send for large Illustrated Circular. J. A. WHITMAN. Patentee & Manufacturer, Providence, R. I.

HYDRO-CARBON LEATHER DRESSING.

Warranted to soften, preserve, black polish and make water proof. For all leather needing any or all of these qualities. Ask reliable dealers for it or send to

A. D. STRONG, Manuf'ct'r, Ashtabula, O.
J. B. HALL, Western Agent,
No. 6 Board of Trade Court, Chicago, Ill.

DAIRY APPARATUS AND SUPPLIES,

EVERYTHING required in FACTORY or DAIRY.

CHEESE and BUTTER-MAKERS furnished.

Estimates for outfits sent on application. Correspondence invited. Circulars sent.

G. B. WEEKS,
Syracuse, N. Y.

SPAIN'S PATENT CHURNS,

Centennial Medal Awarded.

In use over 25 years.

Removable Dasher.

Made of White Cedar with galvanized hoops.

Send for circular and prices.

CLEMENT & DUNBAR,
Philadelphia, Pa.

Self-Recommending Churn.

Extraordinary Offer.

If you want to get a churn, we will send you one to try, and if it gives entire satisfaction, you can remit us the price of the churn less the freight; and if not, you can return the churn to us, at our expense. Address

BLUST & CO., Manufacturers, Mansfield, Ohio.

Send for Circular and Price-list.

Rectangular Churn.

Price greatly reduced. Cheapest and best in market. Six sizes made. Simple, efficient, and *always reliable.* No inside fixtures to turn or keep clean. 50 per cent in labor saved. Cream all churned alike, butter *washed, salted and freed from buttermilk* in the churn. Six sizes of the Square Box churn made.

Churns made of the best material and *warranted* exactly as represented. Circulars free.

CORNISH & CURTIS, Fort Atkinson, Wis.

SELECT BUTTER

Supplied to private families direct from the Dairy of WM. CROZIER, BEACON HILL, NORTHPORT, L. I., Importer, Breeder and Dealer in Ayrshire, Jersey and Guernsey cattle. Mr. Crozier's stock took the highest award at the Centennial Show in 1876; also Gold Medal of N. Y. State Agr. Soc'y, 1869, 1872, and 1878; highest award of the great International Dairy Fair, held in N. Y. City, 1878, first on Ayrshires, first on Jerseys, first on Guernseys, Family Cows, Sheep, and Young Stock, Bulls, and Heifers, on sale. Also 20 Collie Pups. Address as above.

L. E. RANSOM, 34 MAIDEN LANE, N. Y. CITY.
Perfect Butter Color at lowest prices.

TEAS EXTRA CHOICE, 35c. per lb.

All Express Charges Paid on 30 lbs. and upwards. Direct from the Importer to the Consumer. No Middlemen.

CONSUMERS IMPORTING TEA CO., 8 Church Street, New York City.

P. O. Box 4236.

FARMS IN MINNESOTA AND DAKOTA HOMES

OVER 1,000,000 ACRES of FINE FARMING LANDS IN MINNESOTA AND DAKOTA,

W. & St. P. R.R.

For sale by the WINONA & ST. PETER R. R. CO., At from $3 to $6 per Acre, and on liberal terms.

These lands lie in the great wheat belt of the North-West, and are equally well adapted to the growth of other grain, vegetables, etc. The climate is unsurpassed for healthfulness.

They are Free from Incumbrance.

Circulars, Maps, etc., containing full information, sent free.

CHAS. E. SIMMONS, Land Commissioner, Gen'l Offices C. & N.-W. R'y Co., CHICAGO, ILLS.

Mention this paper in writing.

LONG ISLAND FARMS.

400,000 acres of valuable unimproved Farming Lands, within seventy-five miles of New York, on the Long Island Railroad. Cheap Farms and desirable Homes. For information, circulars, etc., address,

W. M. LAFFAN, 361 Broadway, New York.

---

250 MARYLAND FARMS, in Tracts from 30 to 300 acres.

Near railroad and navigable Salt-water (with all its luxuries), in Talbot Co., Md. Climate mild and healthy. Titles good. New Pamphlet and Map showing *location*, free.

Address C. E. SHANAHAN, Atty., Easton, Md.

CHEAP FARMS AND FREE HOMES IN KANSAS

HOW TO GET THEM in the best part of the state. 6,000,000 acres for sale. For free copy of "Kansas Pacific Homestead," address Land Commissioner, Salina, Kansas.

GRAND FARM FOR SALE.

880 ACRES near Janesville, Rock County, Wisconsin. Large Brick Mansion, 25 Rooms. 2 commodious Tenant Houses. Improvements alone very valuable, cost over $25,000. About 700 acres under cultivation. Finely wooded, and watered by ever-living streams and rivulets. Admirably adapted for Dairy, Stock, or Grain Farming. Within 5 miles of the flourishing city of Janesville. Cash price, $30,000. A rare opportunity for investment.

Address W. H. HASBROUCK, Ellenville, N. Y.

HOMES IN THE NEAR WEST.

A choice from over 1,000,000 acres Iowa Lands, due west from Chicago, at from $5 to $8 per acre, in farm lots, and on easy terms. Low freight and ready markets. No wilderness—no ague—no Indians. Land exploring tickets from Chicago, free to buyers. For Maps, Pamphlets, and full information, apply to

IOWA RAILROAD LAND COMPANY, Cedar Rapids, Iowa, or 102 Randolph Street, Chicago.

The Best Wheat Lands.

25 to 42 bush per acre "*No. 1 Ex. Hard*" Wheat, "last three years;" worth $1, and over on the spot, for "new process flour," and *grading up soft* wheat; highest price certain, always, for "*Ex. Hard*" cannot be raised except in this Northern latitude. 2,700 acres of the above land for sale, on the Northern Pacific R. R., Dakota. Also lots in and farms near Council Bluffs, Iowa, terminus Union Pacific, and six other Railroads,

I. W. BARNUM, 253 Halsey St., Brooklyn, N. Y.

IF YOU WANT A FARM OR HOME with independence and plenty in your old age, the BEST THING IN THE WEST is the ATCHISON, TOPEKA, AND SANTA FE R. R. LANDS IN KANSAS

Circulars with map, giving full information, free. A. S. JOHNSON, Acting Land Com'r, Topeka, Kan.

FARMS! Fruit, Grain, and Grass Farms in best part of Maryland at *Panic Prices*. For Catalogues address MANCHA & WILSON, Ridgely, Md.

BUY MARYLAND FARMS! $7 TO $25 per acre. Catalogues sent free.

H. P. CHAMBERS, Federalsburg, Md.

FARMS.—Delaware Fruit and Grain Farms at low prices.

A. P. GRIFFITH, Smyrna, Del.

☞ FRIENDS! If you are in any way interested in

BEES OR HONEY,

We will with pleasure send you a sample copy of our MONTHLY GLEANINGS IN BEE CULTURE, with a descriptive price-list of the latest improvements in Hives, Honey Extractors, Artificial Comb, Section Honey Boxes, all books and journals, and everything pertaining to Bee Culture. *Nothing Patented.* Simply send your address on a postal card, *written plainly*, to

A. I. ROOT, Medina, Ohio.

TEACHERS WANTED.

$50 TO $100, OR $200 PER MONTH.

During the Spring and Summer. For full particulars, address, J. C. McCURDY & Co., Philadelphia, Pa.

WHAT OUR FARMER'S GIRLS OUGHT TO KNOW.

By Dr. MARY J. STUDLEY.

We hope every girl and young woman in America will read it, for the reason that we believe it will tend to make them better women and nobler mothers. We know of no more suitable gift book for our daughters."—*New England Journal of Education.* Price $1.25 by mail. Liberal inducements to agents. 1,000 agents wanted. Address,

M. L. HOLBROOK, 13 & 15 Laight St., New York.

SPECIMENS FREE.

We will on application send to any address a free specimen copy of Toledo Weekly Blade (Nasby's paper), the largest and best family paper published, and the only paper publishing the Nasby letters.

We sell books, both standard and miscellaneous, at half price. Our catalogue is a large one, and mailed free to any address. THE BLADE, Toledo, O.

Scribner's Lumber & Log-Book.

OVER HALF A MILLION SOLD. Most complete book of its kind ever published. Gives measurement of all kinds of lumber, logs, and plank, by Doyles' Rule, cubical contents of square and round timber, stave and heading bolt tables, wages, rent, board, capacity of cisterns, cordwood tables, interest, etc. Standard Book throughout United States and Canada.

Ask your bookseller for it, or one sent by me for 35 cents, post-paid. G. W. FISHER,

P. O. Box 238, Rochester, N. Y.

WE SEND FREE OUR COMPLETE Catalogue of Books of Recitations, Dialogues, Home Amusements, How to Write Compositions, Ready Reckoners, Recipe and Cook Books, Letter Writers, Riddles and Puzzles, Etiquette, Checkers and Chess, Gardening, Ready-made Speeches, Debating, Masonic Books, &c., mailed free. Send address to DICK & FITZGERALD, Publishers. P. O. Box 2975. 18 Ann St., N. Y.

---

60 Chromo, Perfumed, Snowflake, and Lace Cards, Name on all, 10 cts. Game Authors', 15 cts. LYMAN & CO., Clintonville, Conn.

---

60 Chromo and Perfumed Cards, [no 3 alike,] Name in Gold and Jet, 10c. CLINTON BROS., Clintonville, Ct.

---

50 *Perfumed* Chromo, Lily, Snowflake and Lace Cards, *Name in gold*, 10 cts., and yet Post-paid. FRANKLIN PRINTING CO., Northford, Ct.

---

50 GOLD, SILVER, LACE, DIAMOND, LILLY, Rosebud, &c. Cards. Your name neatly printed on them, all, only 10c. STAR PRINTING Co., Northford, Conn.

---

50 Perfumed, Snowflake, Chromo, Motto, Cards, name in gold and jet, 10c. G. A. SPRING, E. Wallingford, Ct.

---

40 MOTTO, CHROMO, ETC., CARDS, name and fancy case, 10 cts. E. D. GILBERT, P. M., Higganum, Conn.

---

25 of the Prettiest Cards you ever saw, or 18 Elegant New Style Chromo Cards, with name 10 cts., post-paid. GEO. I. REED & CO., Nassau, N. Y.

CCC 50 Perfumed, Snowflake, and Chromo Cards in case, name in gold; or 25 Acquaintance, 10c. IMPERIAL CARD CO., Fair Haven, Conn.

PERFUMED CARDS 31 styles; 50 with name, 10 cents, in case, 12 cents; 25 Gold and Silver Borders, 12 cents. NOVELTY CARD CO., Wallingford, Conn.

---

125 Hours MUSICAL Instruction NEW ENGLAND CONSERVATORY, Music Hall, Boston. E. Tourjée, Director. $15.

TUTTLE

The Latest and Best

KNITTER

For Family Use

In the Market.

For Circular, Sample, and Full Particulars, Address

LAMB KNITTING MACHINE Co., Chicopee Falls, Mass.

BARLOW'S INDIGO BLUE.

Its well-known excellence as a Wash-Blue commends it to every grocer as an article of sure sale. Housekeepers using it once will buy again.

D. S. WILTBERGER, Proprietor, No. 233 North Second street, Philadelphia.

TAKE NOTICE.—Upon my return from Europe, 1873, I advertised largely "Beatty's offer for this month: A beautiful piano, upright parlor organ, style 1685, 13 stops, 2 knee swells, 5 sets reeds, weight boxed 350 pounds, monopolist price about $340; MY PRICE ONLY $85." So great was the demand, our men worked at factory till 10 P.M., to fill orders. This unparalleled offer is extended until further notice. To secure it, however, order now. New pianos, $125, $145, and upward. New organs $65 to $440. Pay only after testing instruments at YOUR OWN HOME. Latest circulars free. Address,

DANIEL F. BEATTY, Washington, N. J.

Strong, Safe, Simple, Cheap, Durable, Economical.

Send for Catalogue.

WATERTOWN STEAM ENGINE CO., Watertown, N. Y., U. S. A.

Bookwalter Engine.

Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., (and boxing), at the low price of

3 Horse-Power...$242.00
4½ " " ... 283.50
6½ " " ... 343.50

☞ Put on Cars at Springfield, Ohio.

JAMES LEFFEL & CO., Springfield, Ohio, or 109 Liberty St., New York City.

MME. DEMOREST'S RELIABLE PATTERNS. GRAND opening of rare, beautiful, and distingue novelties in every department of Dress for Ladies and Children, on Monday, March 10. 5 Rue Scribe, Paris; 17 East Fourteenth street, New York, and at all the 2,000 agencies in Europe and America. Mme. Demorest's "What to Wear," 15c.; "Portfolio of Fashion," 15c.; "Mammoth Bulletin of Fashions," 25c.; "Demorest's Journal" (quarterly), 5c.; yearly 15c., either post-free on receipt of price.

$25 FOR A N.Y. SINGER SEWING MACHINE, with drop-leaf table, cover, and case of two drawers, as shown in cut. Warranted New, Latest Improved, and Perfect. No pay asked till seen and tried. Send for circular and save money. Address ECONOMY EMPORIUM, 120 Dearborn St., CHICAGO.

MAGIC LANTERNS

and Stereopticons of all kinds and prices.—Views illustrating every subject, for Public Exhibitions, etc.—*Profitable business for a man with small capital.* Also, Lanterns and Views for *Colleges, Schools, Churches, Sunday Schools, and Parlor Entertainments.* Send stamp for 74-page illustrated Catalogue.

McALLISTER, M't'g Optician, 49 Nassau St., N. Y.

World's ONLY *Manufacturer of*

WHEEL CHAIRS

Exclusively.—ALL Styles and Sizes for Invalids' and Cripples'

Self-propulsion by use of hands only, in or out-doors. Comfort, durability, and ease of movement *unequalled.* Patentee and Maker of the "Rolling Chairs" pushed about at the Centennial. Send stamp for Illustrated Catalogue, and mention *American Agriculturist.*

HERBERT S. SMITH, 32 Platt St., New York.

THE DRIVEN WELL.

TOWN and COUNTY privileges for making Driven Wells and selling Licenses under the established American Driven Well Patent, leased by the year to responsible parties, by

WM. D. ANDREWS & BRO., NEW YORK.

New Edition—Revised and Enlarged.

The Shepherd's Manual.

A Practical Treatise on the Sheep.

Designed Especially for American Shepherds.

By HENRY STEWART.

ILLUSTRATED.

The first edition of this Manual has been so well received, and the letters acknowledging indebtedness for assistance derived from it have been so many and so emphatic, that the author has the best of reasons for presenting this new and enlarged edition to the public. It is intended to be so plain that a farmer, or a farmer's son, who has never kept a sheep, may learn from its pages how to manage a flock successfully, and to be so complete that even the experienced shepherd may gather some suggestions from it. The author feels, with enlarged experience since the first publication of the volume, that he can still more confidently than before encourage the young shepherd to accept this Manual as a guide and a counsellor.

PRICE, POST-PAID, $1.50.

ORANGE JUDD COMPANY, 245 BROADWAY, NEW YORK.

ORANGE JUDD CO.,

245 Broadway, New York City,

Publishers of Books on Agriculture, Horticulture, Architecture, Field Sports, Horses, Cattle, Poultry, Bees, Swine, Sheep, etc., etc.

Beautifully Illustrated Descriptive Rural Book Catalogue, or Sportsman's Catalogue, sent on receipt of two 3-cent postage stamps.

BOOKS for FARMERS and OTHERS.

[Published and for sale by the Orange Judd Company, 245 Broadway, New York. Any of these books will be forwarded by mail, *post-paid*, on receipt of price.]

Farm and Garden.

Allen's (R. L. & L. F.) New American Farm Book.....$2 50
Allen's (R. L.) American Farm Book..... 1 50
Baltet's Grafting and Budding..... 1 75
Barnard's Farming by Inches..... 38
Barnard's Gardening for Money..... 1 50
Barnard's My Ten Rod Farm..... 38
Barnard's Strawberry Garden..... 38
Barry's Fruit Garden..... 2 50
Brackett's Farm Talk.....paper, 50 cts.; cloth. 75
Brill's Farm-Gardening and Seed-Growing..... 1 00
Broom-Corn and Brooms.....paper, 50 cts.; cloth 75
Buist's Family Kitchen Gardener..... 1 00
Cobbett's American Gardener..... 75
Emerson's Farmers' and Planters' Encyclopedia..... 6 00
Enfield's Indian Corn..... 1 00
Farming for Boys..... 1 50
Flax Culture [Seven Prize Essays by practical growers.] 30
Flint (Charles L.) on Grasses..... 2 50
French's Farm Drainage..... 1 50
Gregory on Cabbages..... 30
Gregory on Carrots, Mangold Wurtzels, etc..... 30
Gregory on Onion Raising..... 30
Gregory on Squashes..... 30
Hand-Book of the Grasses of Great Britain & America. 1 50
Harlan's Farming with Green Manures..... 50
Henderson's Gardening for Pleasure..... 1 50
Henderson's Gardening for Profit..... 1 50
Hop Culture. By nine experienced cultivators..... 30
Howard's Grasses and Forage Plants at the South..... 30
How to Get a Farm and Where to find One..... 1 00
Johnson's How Crops Feed..... 2 00
Johnson's How Crops Grow..... 2 00
Klippart's Land Drainage..... 1 75
Klippart's Wheat Plant..... 1 75
Loring's Farm-Yard Club of Jotham..... 3 50
Nichol's Chemistry of the Farm and Sea..... 1 25
Onions—How to Raise them Profitably..... 20
Our Farm of Four Acres.....paper, 30c.; cloth. 60
Potato Culture. (Prize Essay.)..... 25
Quinn's Money in the Garden..... 1 50
Register of Rural Affairs, bound, 8 vols., each..... 1 50
Register of Rural Affairs [1879]..... 30
Riley's Potato Pests.....paper, 50 cts.; cloth.. 75
Roe's Manual on the Culture of Small Fruits..... 50
Roe's Play and Profit in my Garden..... 1 50
Schenck's Gardener's Text-Book..... 75
Stewart's Irrigation for the Farm, Garden, and Orchard 1 50
Ten Acres Enough..... 1 00
Thomas's Farm Implements and Machinery..... 1 50
Tim Bunker Papers; or, Yankee Farming..... 1 50
Tobacco Culture. By fourteen experienced cultivators. 25
Todd's Young Farmers' Manual. 3 vols..... 4 50
Ville's High Farming without Manures..... 25
Waring's Farmers' Vacation..... 3 00
Waring's Handy-Book of Husbandry, 8vo edition..... 2 50
White's Gardening for the South..... 2 00

Fruits and Flowers.

American Rose Culturist..... 30
American Weeds and Useful Plants..... 1 75
Barnard's A Simple Flower Garden..... 38
Breck's New Book of Flowers..... 1 75
Buchanan's Culture of the Grape and Wine Making.... 75
Buel's Cider-Maker's Manual..... 1 50
Buist's Flower-Garden Directory..... 1 50
Charlton's Grape-Grower's Guide..... 75
Cole's American Fruit Book..... 75
Culver's Fruit Preserver's Manual..... 25
Downing's Fruits and Fruit Trees of America. New ed. 5 00
Eastwood on Cranberry..... 75
Elliott's Hand Book for Fruit Growers....pa., 60c.; clo. 1 00
Elliott's Western Fruit-Grower's Guide..... 1 50
Field's Pear Culture..... 1 25
Fuller's Grape Culturist..... 1 50
Fuller's Illustrated Strawberry Culturist..... 20
Fuller's Small Fruit Culturist..... 1 50
Fulton's Peach Culture..... 1 55
Henderson's Practical Floriculture. (New&Enlar'dEd.) 1 50
Hooper's Western Fruit Book..... 1 00
Husmann's Grapes and Wine..... 1 00
Johnson's Winter Greeneries at Home..... 1 00
Mohr on the Grape-Vine..... 1 00
My Vineyard at Lakeview..... 1 25
Pardee on Strawberry Culture..... 75
Parsons on the Rose..... 1 50
Phin's Open Air Grape Culture..... 1 00
Quinn's Pear Culture for Profit..... 1 00
Rivers's Miniature Fruit Garden..... 1 00
Robinson's Ferns in their Homes and Gardens..... 1 50
The Thomery System of Grape Culture..... 30
Thomas's American Fruit Culturist. New Ed..... 3 75
Vick's Flower and Vegetable Garden..paper, 50c.; clo. 1 00
White's Cranberry Culture..... 1 25

Horses.

Baucher's New Method of Horsemanship..... 1 00
Bruce's Stud Book. 3 vols.....30 00
Cole's American Veterinarian..... 75
Coleman on Pathological Horse-Shoeing..... 2 00
Dadd's Modern Horse Doctor. 12mo..... 1 50
Dadd's American Reformed Horse Book. 8vo, cloth... 2 50
Delisser's Horseman's Guide.....boards, 75c.; cloth.. 1 00
Dupaul's Horseback Riding from a Medical Point of View..... 1 25
Dwyer's Horse Book..... 2 00
Every Horse Owner's Cyclopædia..... 3 75
Famous American Race Horses..... 75
Famous American Trotting Horses..... 75
Famous Horses of America..... 1 50
Flowers's Bits and Bearing Reins..... 50
Frank Forester's Horse of America, 8vo. 2 vols..... 5 00
Going's Veterinary Dictionary..... 2 00
Herbert's Hints to Horse-Keepers..... 1 75
Hints and Helps to Horsemen..... 50
Horses and Hounds..... 80
Jennings' Horse Training Made Easy..... 1 25
Jennings on the Horse and his Diseases..... 1 75
Law's Farmers' Veterinary Adviser..... 3 00
Mayhew's Illustrated Horse Doctor..... 3 00
Mayhew's Illustrated Horse Management..... 3 00
McClure's American Gentleman's Stable Guide..... 1 00
Miles on the Horse's Foot..... 75
Percheron Horse..... 1 00
Rarey and Knowlson's Complete Horse Tamer..... 50
Riley on the Mule..... 1 50
Simpson's Horse Portraiture..... 2 00
Stewart's American Farmer's Horse Book..... 3 00
Stewart's Stable Book..... 1 50
Stonehenge on the Horse in Stable & Field. Eng.Ed.8vo. 3 50
Stonehenge on the Horse in Stable&Field, Am.Ed.12mo. 2 00
Wallace's American Stud-Book. Vol. 1..... 10 00
Wallace's American Trotting Register. Vols. 1 & 2.... 30 00
Woodruff's Trotting Horse of America..... 2 50
Youatt and Skinner on the Horse..... 1 75
Youatt and Spooner on the Horse..... 1 50

Cattle, Sheep, and Swine.

Allen's (L. F.) American Cattle..... 2 50
Allen's (R. L.) Diseases of Domestic Animals..... 1 00
Clok's Diseases of Sheep..... 1 25
Coburn's Swine Husbandry..... 1 75
Dadd's American Cattle Doctor, 12mo..... 1 50
Dadd's American Cattle Doctor, 8vo, cloth..... 2 50
Food from the Far West..... 1 50
Guenon on Milch Cows..... 75
Harris on the Pig..... 1 50
Jennings on Cattle and their Diseases..... 1 75
Jennings on Sheep, Swine, and Poultry..... 1 75
Jersey, Alderney, and Guernsey Cow..... 1 50
McClure's Diseases of the Am. Horse, Cattle & Sheep.. 2 00
Quincy (Hon. Josiah) on Soiling Cattle..... 1 25
Randall's Fine Wool Sheep Husbandry..... 1 00
Randall's Practical Shepherd..... 2 00
Randall's Sheep Husbandry..... 1 50
Stewart's Shepherd's Manual. (New & Enlarged Ed.).. 1 50
Reasor on the Hog..... 1 50
Sidney on the Pig..... 50
Thompson's Food of Animals..... 1 00
Waring's Essay on Jersey Cattle..... 50
Youatt and Martin on Cattle..... 1 50
Youatt and Martin on the Hog..... 1 00
Youatt on Sheep..... 1 00

Poultry.

Burnham's New Poultry Book..... 2 00
Corbett's Poultry Yard and Market....pa., 50 cts.; cloth 75
Felch's Amateur's Manual of Poultry..... 75
Geyelin's Poultry-Breeding..... 1 25
Lewis' Practical Poultry Book..... 1 50
Milner's Domestic Poultry Book..... 1 00
Saunders's Domestic Poultry...paper, 40c.; cloth..... 75
Standard of Excellence in Poultry..... 1 00
Stoddard's An Egg Farm.....paper, 50 cts.; cloth 75
Tegetmeier's Poultry Book..... 9 00
Wright's Brahma Fowl..... 2 50
Wright's Illus. Book of Poultry. Cl. 12.50; Half Morocco. 17 50
Wright's Practical Poultry-Keeper..... 2 00

Architecture and Landscape Gardening.

Allen's (L. F.) Rural Architecture..... 1 50
Atwood's Country and Suburban Houses..... 1 50
Atwood's Modern American Homesteads..... 2 50
Bell's Carpentry Made Easy..... 5 00
Bicknell's Cottage and Villa Architecture. New..... 6 00
Bicknell's Detail Cottage & Constructive Architecture. 10 00
Bicknell's Public Buildings. New..... 3 50
Bicknell's School-House and Church Architecture..... 3 00
Bicknell's Specimen Book of Architect'l Design. New. 1 00
Bicknell's Stables, Outbuildings, Fences, and Miscellaneous Details..... 2 50
Bicknell's Street, Store, and Bank Fronts. New..... 4 00
Bicknell's Supplement to Village Builder..... 4 00
Bicknell's Village Builder and Supplement..... 10 00
Burns' Architectural Drawing Book..... 1 00
Burns' Illustrated Drawing Book..... 1 00
Burns' Ornamental Drawing Book..... 1 00
Cleveland's Landscape Architecture..... 1 50
Copley's Plain and Ornamental Alphabets..... 3 00
Croff's Progressive American Architecture..... 6 00
Cummings' Architectural Details..... 5 00
Cupper's Stair-Builder..... 2 50
Downing's Landscape Gardening..... 6 50
Elliott's Hand-Book of Practical Landscape Gardening. 1 50
Eveleth's School House Architecture..... 4 00
Gould's American Stair-Builder's Guide..... 3 00
Gould's Carpenter's and Builder's Assistant..... 3 00
Guillaume's Interior Architecture..... 3 00
Harney's Barns, Out-Buildings and Fences..... 4 00
Holly's Carpenters' and Joiners' Hand-Book..... 75
Hussey's Home Building..... 5 00
Hussey's National Cottage Architecture..... 4 00
Jacques' Manual of the Garden, Farm, and Barn-Yard. 1 50
Jacques's Manual of the House..... 1 00
Kern's Practical Landscape Gardening..... 1 50
Lakey's Village and Country Houses..... 5 00
Leuchar's How to Build Hot-Houses..... 1 50
Loth's Practical Stair-Builder..... 10 00
Monckton's National Carpenter and Joiner..... 5 00
Monckton's National Stair-Builder..... 5 00
Palliser's American Cottage Homes..... 5 00
Plummer's Carpenters' and Builders' Guide..... 1 00
Reed's House Plans for Everybody..... 1.50
Rural Church Architecture..... 4 00
Weidenmann's Beautifying Country Homes. A superb quarto volume. 24 lithograph plates, in colors....15 00
Wheeler's Homes for the People..... 2 00
Wheeler's Rural Homes..... 1 50
Wither's Church Architecture..... 15 00
Woodward's Cottages and Farm Houses..... 1 00
Woodward's Country Homes..... 1 00
Woodward's Graperies and Horticultural Buildings.... 1 00
Woodward's National Architect. Vols. 1 & 2..... 15 00
Woodward's Suburban and Country Houses..... 1 00
Woollett's Old Homes Made New..... 1 50
Woollett's Villas and Cottages..... 3 00

Field Sports and Amusements.

Archer, The Modern..... 25
Archery, Witchery of..... 1 50
Athletic Sports for Boys.....bds. 75c.; cloth.. 1 00
Dinks, Mayhew, and Hutchinson, on the Dog..... 3 00
Dog, by Hill..... 2 00
Dog, The, by Idstone..... 1 25
Dog—Paths to Success..... 50
Dogs, by Stables..... 75
Dogs, by Richardson.....paper, 30 cts.; cloth.. 60
Every Boy's Book of Sports..... 3 50
Fishing in American Waters..... 3 50
Fishing Tourist, Hallock..... 2 00
Frank Forester's Field Sports..... 4 00
Frank Forester's Fish and Fishing..... 2 50
Frank Forester's Manual for Young Sportsmen..... 2 00
Gildersleeve's Rifles and Marksmanship..... 1 50
Hallock's Sportsman's Gazetteer..... 3 00
How to Camp Out, Gould..... 1 00
On the Wing, Bumsted..... 1 50
Stonehenge, Dogs, British Islands..... 7 50
Stonehenge Encyclopædia of Rural Sports..... 4 50
Stonehenge, Every Horse Owner's Cyclopædia..... 3 75
Stonehenge on the Dog..... 3 75
Stonehenge on the Horse. Eng. ed., 8vo..... 3 50
Stonehenge on the Horse. Am. ed., 12mo..... 2 00

Important Work for All Farmers and Gardeners.

JUST PUBLISHED:

FARM IMPLEMENTS AND MACHINERY

AND

The Principles of their Construction and Use, with Explanations of the Laws of Motion and Force as Applied on the Farm.

WITH OVER THREE HUNDRED ILLUSTRATIONS.

By JOHN J. THOMAS.

NEW EDITION, REVISED AND ENLARGED.

Cloth, 12mo. Price, Post-paid, $1.50.

The New Volume brings the Inventions and Improvements in Farm Machinery down to the latest date. It will be found specially interesting and valuable to farmers in the Western States, where so much farm machinery is used and where reliable knowledge as to the best kind of machinery is difficult to obtain.

Just Published.

A TEXT-BOOK OF Veterinary Obstetrics.

INCLUDING THE DISEASES AND ACCIDENTS INCIDENTAL TO PREGNANCY, PARTURITION, AND EARLY AGE IN DOMESTICATED ANIMALS.

With Two Hundred and Twelve Illustrations.

By GEORGE FLEMING,

VETERINARY SURGEON, 2D LIFE GUARDS; FELLOW, MEMBER OF COUNCIL AND OF THE EXAMINING BOARD, OF THE ROYAL COLLEGE OF VETERINARY SURGEONS; FELLOW OF THE ROYAL GEOGRAPHICAL SOCIETY, ANTHROPOLOGICAL INSTITUTE, AND OF THE ANTWERP, NEW YORK, MONTREAL, CENTRAL, AND LIVERPOOL VETERINARY MEDICAL SOCIETIES; CORRESPONDING MEMBER OF THE PARIS CENTRAL VETERINARY SOCIETY, ETC.

Author of "Travels on Horseback in Mantchu Tartary," "Horse-shoes and Horse Shoeing," "Animal Plagues," "Practical Horse-shoeing," "Rabies and Hydrophobia," "The Contagious Diseases of Animals," "Manual of Veterinary Sanitary Science," Translator and Editor of "Chauveau's Comparative Anatomy of the Domesticated Animals," Editor of the "Veterinary Journal."

CLOTH, 8vo. PRICE, POST-PAID, $6.00.

How to Hunt and Trap.

By JOSEPH H. BATTY.

A new Sportsman's Guide for Hunting, Trapping, Taxidermy, etc. Mr. Batty has accompanied the Hayden Exploring Expeditions, and writes from experience.

CLOTH, 12mo. PRICE, POST-PAID, $1.50.

IN PRESS:

A NEW WORK ON DOGS,

Including Stonehenge's last two works on the Dogs of the British Islands, revised, with New Chapters, by American Authors, the whole making a volume admirably adapted for

AMERICAN SPORTSMEN.

A complete work, covering **History of Breeding, Training, Management, and Treatment** of diseases of all kinds of dogs, also description of **Best Hunting Localities.** Fully illustrated with the prominent Dogs of England and America. Price $3, post-paid.

Any one of the above books sent post-paid on receipt of price.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.